Hospital Library

This Issue Exceeds 92,600 Copies

THE JOURNAL

OF THE

American Medical Association

Subscription, $7.00 | PUBLISHED WEEKLY | Single Copies, 25 Cents

VOLUME 107, No. 7

COPYRIGHT, 1936, BY AMERICAN MEDICAL ASSOCIATION

535 North Dearborn Street, Chicago, Ill.

AUGUST 15, 1936

CONTENTS AND SUBJECT INDEX

Resistance in Tuberculosis: Chairman's Address. James Alexander Miller, M.D., and Israel Rappaport, M.D., New York.....471

Pathogenesis of Tuberculosis. Max Pinner, M.D., Oneonta, N. Y...475

Papers of Drs. Miller and Rappaport and Dr. Pinner discussed by Drs. Sweany, Pottenger, Miller and Pinner.

Intravenous Treatment of Meningococcic Meningitis with Meningococcus Antitoxin. Archibald L. Hoyne, M.D., Chicago.....478

Discussed by Drs. Bower, Kempf, Levy and Hoyne.

Osteomyelitis of the Inferior Surface of the Petrous Pyramid. Wells P. Eagleton, M.D., Newark, N. J..482

Discussed by Drs. Coates, Lillie, Myerson, Profant and Eagleton.

The Physician's Place in the Health Program. W. W. Bauer, M.D., Chicago 485

Discussed by Drs. Lyon, Osborn and Bauer.

Athletic Injuries. M. H. Hobart, M.D., Evanston, Ill.....488

CLINICAL NOTES, SUGGESTIONS AND NEW INSTRUMENTS

A New Syringe for the Multiple Syringe Method (Lindeman). J. S. Houck, M.D., Rochester, N. Y..491

The Use of Living Fascia Transplant to Repair a Hernia of the Tibialis Anticus Muscle. John B. Hartzell, M.D., Detroit.....492

Agranulocytic Leukopenia Induced by a Drug Related to Aminopyrine. Julien E. Benjamin, M.D., and Joseph B. Biederman, M.D., Cincinnati 493

Infantile Eczema from Cod Liver Oil: Report of Two Cases. S. J. Hoffman, M.D., and Herbert Rattner, M.D., Chicago.....494

SPECIAL CLINICAL ARTICLE

Present Status of Transurethral Resection of Prostate: Clinical Lecture at Kansas City Session. H. C. Bumpus Jr., M.D., Pasadena, Calif. 494

COUNCIL ON PHYSICAL THERAPY 498

COUNCIL ON PHARMACY AND CHEMISTRY

Heterophile Antibody in the Treatment of Pneumonia. Norman Plummer, M.D., New York....499

EDITORIALS

Rheumatic Infection in Childhood 502

Antianemic Substance in Normal Human Urine.....503

Osmotic Effect of Calcium Ions in the Blood.....503

CURRENT COMMENT

Blood Viscosity in Heart Failure.504

MEDICAL ECONOMICS

Vital Statistics in Sickness Insurance 505

BUREAU OF LEGAL MEDICINE AND LEGISLATION 529

(Subject Index on next page)

A.M.A. SESSION • ATLANTIC CITY, N. J. • JUNE 7-11, 1937

A complete Operative Surgery

One of the strongest reasons for the continued success of *Bickham's "Operative Surgery"* is its universality. General Surgeon, Specialist, and Family Physician, too, have found this work quickly responsive to demands made upon it, because it covers not only the operations of General Surgery but also those of Minor Surgery and the Specialties. *The work is complete!*

Moreover, it includes many features which make it unusually serviceable, and a safe guide to follow. It gives important landmarks and warning signals. It advises in the choice of incision. It gives suggestions to meet special conditions that may arise. It details care and management. It *applies* surgical anatomy to the particular operation. It includes numerous "Comments", recording experience with the operations described. It includes Preoperative and Postoperative Procedures and details of care and management.

It is a work of 6279 pages of *surgery of the amphitheatre, containing 7196 magnificent illustrations* which show the technic through step-by-step picturization. The entire work from beginning to end is *practical*—not theoretical!

Turn to page 3 and read Saunders "Easy Payment Plan" through which you can place this great work in your library at once and extend the payment as long as 13 months.

Further details in SAUNDERS ADVERTISEMENT—Page 3

SUBJECT INDEX TO THIS ISSUE

The letters used to explain in which department the matter indexed appears are as follows: The Star (*) indicates an Original Article; "ab," abstract; "E," Editorial; "C," Correspondence; "Ml," Medicolegal; "ME," Medical Economics.

Abdomen, painful syndrome, rheumatic infection in childhood....E-502
Abortion, miscarriage with nosebleed....524
Académie de chirurgie, new fellows....514
Acne vulgaris, manganese for....525
Acrodynia, infantile....513
Adhesive plaster dermatitis....ab-539
Alcohol, intravenous....ab-545
Allergy, leukopenic index in....C-520; ab-540
teaching, status....C-520
American Association for Study and Control of Rheumatic Diseases....530
Board of Gynecology and Obstetrics....510
Aminopyrine derivative, agranulocytic leukopenia from....*493
Anemia, simulating arthritis....ab-536
pernicious, treatment with urine....E-503
Angina, agranulocytic leukopenia induced by Novaldin....*493
Angina Pectoris, simulating anemia....ab-536
Antibody, heterophile, in pneumonia treatment....*499
Arm, glomus tumors....C-520
Arthritis, atrophic, differentiating from periarticular fibrositis....ab-534; ab-535
chronic, treatment....522
differential diagnostic points....ab-536
gonococcic, differential diagnosis....ab-532
gouty....ab-533; ab-534; ab-535
relation of sinusitis....ab-539
traumatic, differential diagnosis....ab-530
tuberculous, differential diagnosis....ab-531
Ascites, differentiating from ovarian cyst..ab-545
Athletics, injuries....*488
Automobile deaths decrease in 1936....510
Backache, does traumatic lumbago exist?..513
Barbiturates, roentgen reaction elicited by....C-520
Benzedrine, hypertension produced with..ab-543
Biology, Société de biologie of Paris....512
Blood, bactericidal power, and intravenous alcohol....ab-545
circulation in paroxysmal tachycardia....523
osmotic effect of calcium ions in....E-503
pressure, high, caused by benzedrine..ab-543
sugar, menstrual hypoglycemia....ab-538
transfusion, new syringe for....*491
uric acid, in gout....ab-534
viscosity in heart failure....E-504
Board Examinations....526
Book Notices....527
Books Received....Adv. page 28
Brain circulation, epinephrine effect on....512
hemorrhage, autohemotherapy....ab-545
British Medical Association....510
Bureau of Investigation....519
Bureau of Legal Medicine and Legislation..529
Cancer, new test for carcinogenic oil....511
survey, coordinating agencies in, Conn...506
Carbon suspensions injected intravenously, ill effects....ab-545
Cecum, tuberculous tumor....ab-547
Cerebrospinal Fluid, hypersecretion in migraine....ab-539
Chickenpox, incubation period....521
Chrysarobin, treatment of psoriasis....525
Cod Liver Oil, infantile eczema....*494
ointment, effect on infected wounds...ab-543
Contracture, Volkmann's, arteriectomy for..512
Correspondence....520
Council on Pharmacy and Chemistry....499
Council on Physical Therapy....498
Cowpox, incubation period....521
Criminal, can incorrigibility be determined in?....516
Deafness, electrical hearing aids for....ab-538
prescribing of hearing aids....511
Deaths....517
Dentistry, biologic....514
Dermatitis, contact, from adhesive plaster..ab-539
differential diagnosis....525
Diabetes Mellitus, insulin resistance and pituitary irradiations....ab-545
Digitalis, use as preventive of cardiac hypertrophy....524
Diphtheria, immunity in Congo....516
incubation period....521
Dislocations, treatment, in athletes....*488
Dysmenorrhea, functional, and menstrual hypoglycemia....ab-538
Dystrophy, progressive muscular, remissions in....ab-540
Eczema, infantile, from cod liver oil....*494
Elbow, osteochondritis dissecans....ab-544
Emphysema, subcutaneous, after wounds....524
Empyema, pleural lavage in....ab-546
Encephalitis, epidemic, sequels, Bulgarian treatment....ab-546
Encephalomyelitis after smallpox vaccination.525
Eosinophilia, polymyositis with....ab-542
Epilepsy, etiology....516
Epinephrine, effects on cerebral circulation..512
Fascia, living, transplant, to repair hernia of tibialis anticus muscle....*492
Fibrositis periarticular....ab-534; ab-535
Fingers, subcutaneous emphysema after wounds....524
Fiske fund prize essay....509
Fistula, petrous pyramid....*482
Flexner, Simon, honored....508
Fontanels, early ossification....ab-546
Food allergy and leukopenic index..C-520; ab-540
poisoning after picnic, N. H....507
Foreign Letters....511
Fulton, W. S., appointed to Social Security Council, W. Va....509
Gallbladder, electrosurgical obliteration without drainage....ab-537
Gargles, efficacy....C-520
Gastro-enteritis and vitamin C....ab-548
Glomus tumors....C-520
Gonadotropic Hormones, Wisconsin Alumni Research Foundation patents....509
Gonorrhea vaginitis, treatment in child....523
Gout, diagnosis....ab-533; ab-534; ab-535
Hand, glove flap method of dorsal repair..ab-537
Headaches, effect of cervicothoracic sympathectomy on....ab-537
Health program, physician's place in....*485
activities, expansion, Michigan....507
at Omaha....507
Western School of Public Health....506
Hearing aids, prescribing....511
Heart disease and tobacco....521
disease, rheumatic, in children....ab-541
dynamics, in paroxysmal tachycardia....523
enlargement, digitalis as preventive....524
failure, blood viscosity in....E-504
Herpes zoster, differential diagnosis of dermatitis....525
Holmes-Adie syndrome....511
Hospitals, state society surveys, New Jersey.508
Humerus, Volkmann's contracture after supracondyloid fracture of....512
Ileum, tuberculous tumor....ab-547
Incubation period....521
Industrial disease, fibrositis....ab-536
Infections, alkalis of bile acids for....ab-547
hypophysis and resistance to....ab-540
incubation period....521
Influenza meningitis, continuous subarachnoid drainage for....ab-539
Instruments, German surgical, not subject to increase of duty....510
Insurance, accident: heart disease; aggravation by strain....Ml-529
health, vital statistics in....ME-505
social, loophole in law, France....512
social, organization establishes diagnostic centers, France....512
Internal Medicine, joint congress of new German medicine and....514
International Congress for Hydrology, Climatology and Medical Geology....510
Congress for the Study of Light....510
Jacobi, Abraham, memorial to....508
Jaundice, hemolytic familial....513
Kidney function test, trypan red for....ab-546
tuberculosis, tubercle bacilli in urine after nephrectomy....ab-545
Kindred, J. J., honored....508
Lacerations, treatment, in athletes....*488
Lead poisoning, calcium therapy....ab-548
Leishmaniasis, diagnosis, iron peptonate serum reaction....ab-544
Leprosy, transmission, theory....ab-546
Leuko-erythroblastosis....ab-542
Leukopenic Index in allergic diseases....C-520; ab-540
Lindeman multiple syringe method, new syringe for....*491
Lung abscess, artificial pneumothorax for..ab-541
Malpractice: identity of physician; mistake in....Ml-529
Marriages....517
Medical Economics....505
Medical Education, graduate institutes, Florida....506
state council on, Nebraska....507
Medical Examinations and Licensure....526
Medicine, new German....513
Medicolegal Abstracts....529
Meetings, Coming Meetings....529
Meningitis, influenzal, continuous subarachnoid drainage for....ab-539
meningococcic, meningococcus antitoxin intravenously....*478
Menstruation, hypoglycemia....ab-538
nosebleeds with....524
Methyl Alcohol poisoning, hemorrhages in brain in....ab-548
Migraine, mechanism....ab-539
Milk, new regulation adopted, Conn....506
Muscle, tibialis anticus, hernia, living fascia transplant to repair....*492
Myositis, polymyositis with eosinophilia..ab-542
Nature Cure medicine....514
Nerves, autonomic and somatic....ab-538
Neuritis, vitamin B_1 treatment of polyneuritis....ab-542
Neurosyphilis....522
News....506
Nose hemorrhage, miscarriage with....524
Novaldin, agranulocytic leukopenia induced by....*493
Osteochondritis dissecans of elbow....ab-544
Osteomyelitis of inferior surface of petrous pyramid....*482
Otitis media, spinal puncture advisable?....522
Ovary cyst, differentiating from ascites..ab-545
pain in area....522
Parathyroid disorders, skeletal changes in..ab-541
Pentobarbital sodium, beneficial effect in roentgen ray nausea....C-520
Petrous pyramid, osteomyelitis of....*482
Physical Therapy, American Congress of...510
Physician, place in health program....*485
appointed to social security council, W. Va....509
Pituitary and resistance to infections and tumors....ab-540
Plague infection, Utah....509
Pneumonia, heterophile antibody treatment..*499
Pneumothorax, artificial, for lung abscess..ab-541
strain (overexertion) as cause of....Ml-529
Poliomyelitis situation, Alabama....506
Prostate, resection (transurethral)....*494
Psoriasis, dioxyanthranol for....525
Psychology, medical, Institute of....511
Puerperium, surgical scarlet fever....ab-543
Queries and Minor Notes....521
Rheumatic Fever, differential diagnosis...ab-530
in childhood....E-502
Rhinitis, vasomotor....521
Roentgen reaction elicited by barbiturates..C-520
Scarlet Fever, incubation period....521
puerperal surgical....ab-543
Schneiler, M. R., German traitor sentenced to prison....508
Silicosis, study of, New York....508
Sinusitis, relation to arthritis....ab-539
Smallpox, incubation period....521
vaccination, encephalomyelitis after....525
Soap, differential diagnosis of dermatitis....525
Society Proceedings....529
Spinal Puncture advisable in chronic otitis media?....522
Splenomegaly, leuko-erythroblastosis....ab-542
Sprains, treatment, in athletes....*488
Staphylococcus toxoid....ab-544
State Board Examinations....526
Stewart memorial fund for visiting professorship....507
Sympathectomy, cervicothoracic, effect on headaches....ab-537
Syphilis, conditions mistaken for arthritis..ab-536
Syringe, new, for multiple syringe method (Lindeman)....*491
Tennis arm....522
Tobacco and heart disease....521
Tonics and Sedatives....Adv. page 22
Trichinosis, silver arsphenamine in....525
Tuberculosis, pathogenesis....*475
Cragmor Sanatorium reopens....506
pulmonary, hilus glands and pleura in..ab-547
pulmonary, pectoralis muscle as filling for cavities....ab-547
resistance in....*471
Tumors, hypophysis and resistance to....ab-540
pathology, graduate course on....506
Urine acidifier: acid ammonium phosphate....ab-542
antianemic substance in....E-503
specific gravity....523
Uvula, apoplectiform hemorrhage in....ab-544
Vein, splenic, stricture....ab-548
Virus, refrigeration for conservation of....512
Vision, acuity, measuring....525
Vital Statistics in sickness insurance...ME-505
Vitamin B_1 treatment of polyneuritis....ab-542
C and gastro-enteritis....ab-548
Weltmann's reactions, micromethod for..ab-548
Wood, Leonard, memorial archway, Ft. Sheridan....506
Wounds, infected, effect of cod liver oil ointment....ab-543
subcutaneous emphysema after....524
Wyoming State Medical Society meeting....509
Yeiser, Craig, memorial fund....508
Yellow Fever, detect by examining liver..ab-544

THE JOURNAL of the American Medical Association is published weekly by the American Medical Association, 535 North Dearborn Street, Chicago, Ill. Subscription price, $7.00 a year. 25c a copy. Canadian $8.50. Foreign $11.00. Entered as second class matter June 25, 1885, at the Postoffice at Chicago, Ill., under Act of March 3, 1879.

The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. 107, No. 7 — COPYRIGHT, 1936, BY AMERICAN MEDICAL ASSOCIATION — CHICAGO, ILLINOIS — AUGUST 15, 1936

RESISTANCE IN TUBERCULOSIS

CHAIRMAN'S ADDRESS

JAMES ALEXANDER MILLER, M.D.
AND
ISRAEL RAPPAPORT, M.D.
NEW YORK

The diminution in the death and morbidity rate from tuberculosis is a very remarkable epidemiologic fact. With it has been associated also a marked decrease in the percentage of the population which responds to the tuberculin test and a definite change in the character of the disease. These changes have been noted not only in this country but in the greater part of the civilized world, and while they have been most rapid in recent years they have been gradually going on through several generations.

The underlying causes of this situation have been the subject of considerable speculation. While it cannot be denied that the protection from infection afforded by the better segregation of open cases is a definite factor and that also the improvement in the economic and social status of the people should be considered, still it would appear that a changed resistance to tuberculous infection is a very important factor.

The subject of resistance to tuberculosis has been the object of extended animal research as well as other studies. It is our purpose to attempt to interpret existing knowledge of the subject, looking toward its better understanding. This would appear to be needed, because many current ideas on this subject are very hazy and in general fail to express a clear conception of the rôle which this factor may play in the epidemiology of the disease.

According to our conception, four main factors may be distinguished in the resistance to tuberculosis as manifested both in the individual and in the group as represented by the family and the race.

These factors may be divided into the specific and the nonspecific. Under the specific factors we would list acquired resistance, inherited resistance and accumulated resistance, which is really the combination of the other two. The nonspecific factors may be designated as constitutional fitness, by which is simply expressed the well known fact that some individuals do not become sick as easily as others, and applies to many other conditions as well as to tuberculosis.

ACQUIRED RESISTANCE

On first infection with tuberculosis the immediate reaction of the body is nonspecific but sets going a specific immunobiologic process by which resistance to the disease is eventually acquired. As this resistance succeeds in overcoming infection it becomes increasingly more efficient through an ability to destroy the bacilli and thus to halt the progression of the infection. This acquired resistance manifests itself in tuberculosis by what is termed allergy, which is clinically recognized by characteristic tissue reactions to tuberculin.

It is important to emphasize that the method of action of this type of resistance is by the destruction of the tubercle bacilli or by eliminating them from the body by the process of softening. This destruction of tubercle bacilli, though protective in purpose, unfortunately involves an inflammatory reaction with the liberation of toxins and consequent disease-producing complications, which may be very severe or even fatal.

The milder forms of this reaction, however, tend not only to destroy the bacilli but at the same time to build up a resistance to subsequent infection, and when these infections are periodically repeated a very real degree of resistance to each new infection is thereby developed.

INHERITED RESISTANCE

In our effort to understand the remarkable changes which have occurred in the epidemiologic evolution of tuberculosis we are unable to escape the conclusion that succeeding generations which have been exposed to tuberculosis do not react in the same way as those not so exposed. This would appear to imply that some inherited change in the reaction of the individuals of later generations has occurred because of the experience of the preceding ones, and that consequently something in the nature of increased capacity to acquire resistance has been passed on through inheritance.

We do not pretend to know just how this occurs. We are aware of the prejudice against the idea of the inheritance of acquired characteristics. We may also speculate as to whether the changed resistance of the child of the new generation may be a characteristic acquired intra utero from the mother.

Our own hypothesis is that, since recent evidence suggests that resistance depends largely on the reaction of the tissues to the various chemical components of the body of the tubercle bacillus, the quality that is transmitted is a chemical one or at least one of increased potentiality to a certain chemical adaptation.

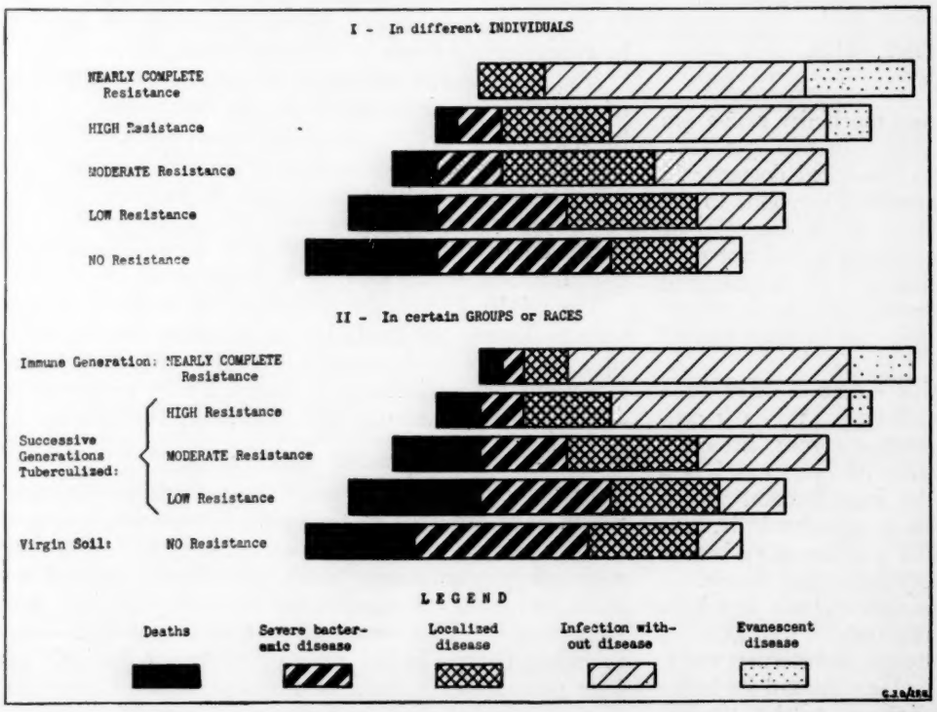
But in any event we believe that there is a very definite factor of inherited resistance which may explain many of the problems in tuberculosis as it is seen in individuals and as it is exemplified in families or in races.

We would conceive of this type of resistance as being a specific power to inhibit the growth of bacilli at the very outset of infection, and to those who possess it the need of acquiring resistance to destroy multiplying

Read before the Section on Miscellaneous Topics, Session on Tuberculosis, at the Eighty-Seventh Annual Session of the American Medical Association, Kansas City, Mo., May 13, 1936.

bacilli in the body does not exist or at least is less urgent. Possessed of this type of resistance, the individual does not need to go through the slow process of acquiring specific resistance with its implications of a disease-producing degree of allergization. The infection or lesion in such an individual will remain slight or ephemeral according to the degree of specific resistance that has been inherited. We would suggest that in countries where tuberculosis has existed for many generations this factor alone is sufficient in many individuals to prevent the occurrence of disease from the minimal dose which goes with the usual inhalation infection.

The amount of specific resistance which can be transmitted by any individual to his progeny can only be that degree which is possessed by the individual himself. But it is our conception that here too each new infection will still further develop his acquired resistance and that this additional resistance may be added to the store of specific resistance which this individual will possess and which may be passed on in this enhanced degree to the next generation. The combination of the inherited specific resistance and the acquired specific resistance would give the completed resistance which we would term our third factor; namely, accumulated specific resistance.



Schema of levels of resistance: I illustrates how the character of infection and disease is modified by individual differences in resistance. II illustrates how the mortality and morbidity are modified in the group as the resistance rises with successive generations.

ACCUMULATED SPECIFIC RESISTANCE

The first factor, namely, the inherited resistance, which we have defined as the power to inhibit the growth of tubercle bacilli in the body, has thus become progressively increased by the addition of acquired resistance through successive generations, so that it is theoretically possible that a state of comparative immunity to ordinary doses of infection may ultimately be obtained. But, as far as is known, no human individual ever becomes absolutely and completely immune.

NONSPECIFIC CONSTITUTIONAL FACTORS IN RESISTANCE

In addition to the specific factors in resistance already discussed, there are also variations due to fundamental constitutional differences between individuals.

It is well known that some individuals do not become sick as easily as others. This difference is perhaps best described as the natural constitutional fitness of the individual. It applies to every vital function and to many diseases and includes as far as tuberculosis is concerned a particularly important function, that of the power of serogenesis, which may be defined as constitutional fitness in relation to immunobiologic reactions.

That this constitutional factor comes largely through inheritance there can be no doubt, but it has no direct relation to previous infection either in the individuals or in their progenitors. Recent evidence indicates that one is dealing here with a potentiality for resistance, and, as far as the serogenic fitness is concerned, that this develops in the individual by a process of maturation with increasing age. This factor operates in the individual or group which comes in first contact with tuberculosis and affects the ability to acquire resistance; that is, it determines his self-allergizing power. By the same token it also affects the store of inherited resistance of the individual, which is subject to lapses with the fluctuations of the general vitality of the individual under the effect of various untoward influences of a lifetime, such as age periods (infancy, puberty) and the effect of intercurrent disease or pregnancy, of impaired nutrition, of severe or prolonged economic or emotional stress. Thus it is noted that great variations in the potentiality to develop specific resistance occur dependent on a general nonspecific characteristic which is called constitutional fitness.

APPLICATION OF THESE PRINCIPLES TO THE GROUP

The same general principles hold for the group and for the individual. Differences in the racial and individual evolution of tuberculosis are based on the same factors; namely, differences in accumulated specific resistance. The resistance of the race depends on the level in the immunity scale on which the majority of the individuals rest, and races will rise in this scale according to past tuberculization. In races which have been tuberculized through succeeding generations the inheritance factor is probably the most important one, so that, in some members of such a race, resistance is perhaps nearly absolutely complete and in the vast majority it prevents more than a slight and ephemeral reaction to the infection. In those who develop disease,

the character of the tuberculosis is of a much milder type than would otherwise be the case.

On the other hand, in races which have only recently come in contact with tuberculosis or races which show a genotypic inferiority as regards immunizability to tuberculosis, it is increased susceptibility that is inherited. This is responsible for the increase of mortality in the generation following the first contact with the disease. It is only when the inheritance factor reaches an immunizing degree on its upward scale that mortality and morbidity turn downward. The remarkable phenomenon of persistently high morbidity with conspicuously low mortality in some very long and thoroughly tuberculized races such as the Jews is an indication of the effect of unfavorable social and economic conditions which act through the nonspecific factors in diminishing the effect of the specific factors.

APPLICATION OF THESE PRINCIPLES TO THE INDIVIDUAL

The accumulated specific resistance, as represented first by the inherited factor which prevents the multiplication of the bacilli in the body and secondly by the acquired factor which through allergy protects against reinfection by the power to destroy the bacilli, will determine in the individual the character of his response to the infection.

In what we call virgin soil, characterized by lack of both inherited and acquired resistance, an immediate critical situation is produced, so that, if overwhelming disease is to be prevented, allergic resistance must be acquired with extraordinary rapidity. The slower this process takes place, the more likely is the development of severe or directly fatal disease. This accounts for the acute types of tuberculosis in virgin soil.

If, however, a considerable amount of inherited resistance exists, this prevents the multiplication of the bacilli at the site of infection and allows time for the development of acquired resistance, which may be able to take care of the comparatively small number of bacilli which develop in the body under such circumstances. As exogenous inhalation infection is always in a minimal dose, the presence of this type of resistance will often tend to localize the lesion and prevent the development of disease. If, however, bacilli multiply in the body either because of the large dosage of infection or the lack of specific inherited resistance to prevent their multiplication, endogenous reinfections occur in the body, often in very large doses, and the power to overcome this type of infection depends on the response of the specific allergic resistance which the individual may develop.

Consequently, depending on the level in the scale of inherited resistance at which they are born and depending on their particular ability to acquire allergic resistance at the time of infection, different individuals evolve different tuberculous processes. The less inherited resistance the individual may have, the more he must acquire if he is to overcome disease, while those born with a high inherited resistance sufficient to prevent multiplication of bacilli immediately on first invasion will develop an infection of a very ephemeral character. Thus is explained the wide range of transitions between the rapidly progressing fatal disease which develops in virgin soil, on the one hand, and the evanescent type of infection which is so mild that it may be entirely unnoticed, on the other. Between these two extremes are all the kaleidoscopic variations in the clinical manifestations of tuberculosis.

How they may be analyzed according to the interplay of the various possible combinations of inherited and acquired resistance is indicated in table 1. And how these levels of resistance may affect the character of the disease both in individuals and in races is schematically illustrated in the accompanying chart.

THE INTERPRETATION OF ALLERGY

In addition to our application of these principles to the behavior of tuberculosis in individuals and in groups it seems desirable to discuss certain other interesting phases of the general subject of resistance and first the interpretation of allergy.

We as clinicians are particularly familiar with allergy as applied to tuberculosis in connection with the clinical response of individuals to the tuberculin test. That this is a specific allergic response is now well known, but what its presence or absence may imply or what the variations in degree of its reaction signify is still a matter of serious difference of opinion.

An individual who has never been infected will not respond to tuberculin; allergy is absent. On the other hand, there is increasing evidence that many individuals

TABLE 1.—*Interplay in Tuberculosis of Inherited Resistance and Acquired (Allergic) Resistance*

Inherited Resistance	Acquired (Allergic) Resistance	Resulting Process
High	Good	Evanescent infection
Fair	Good	Infection without disease
Low	Good	Localized disease (phthisis)
None	Medium	Generalized disease
Low	Medium	Localized disease
Fair	Medium	Infection without disease
High	Poor	Localized disease
Fair	Poor	Generalized disease
Low	Poor	Severe generalized disease
None	Poor	Fatal generalized disease

This table indicates that the disease is generalized and severe when both inherited and acquired resistance are low or when either one of them is very low while the other is only fair; that the disease is mild and localized when either the inherited or acquired resistance is high while the other is at least fair; that no disease follows infection when both inherited and acquired resistance are fairly high; that the infection is of the evanescent type when both inherited and acquired resistance are the highest possible.

who have been infected may lose their response to tuberculin. This type of tuberculin-negative individuals behaves very differently from the type characterized by virgin soil. It is probable that these individuals have undergone an infection so ephemeral that their allergy is very evanescent and may at times remain altogether undetected.

According to our concept, this, for example, would be the case with individuals who have a very high inherited resistance with good constitutional fitness. On the other hand, we see instances of negative tuberculin reaction which definitely show an absolute lack of resistance, such as are seen in the end stages of progressive disease or in connection with certain other acute conditions such as measles. These cases are on the other end of the scale; their failure to develop allergy is not because it is not needed but because there is an absolute inability in the individual to develop it. Or if, in other individuals, the constitutional fitness is very poor and the inherited resistance is very low, there may be also a lack of self-immunizing power to develop allergy, which may exhibit a negative tuberculin reaction in the presence of extensive disease with a very poor prognosis.

On the other end of the scale may be cases showing a very prompt and severe inflammatory tuberculin reaction. This by no means should be interpreted as necessarily indicating a very severe and progressive disease; it is much more apt to indicate a very prompt and perhaps quite efficient allergic response which is called for because in that individual the inherited resistance may have been quite low. Between these two extremes appear all the variations of degree of allergic response as shown by the tuberculin test, which may be interpreted in connection with our conception of constitutional fitness and inherited resistance, as indicated in table 2.

It is necessary to keep clearly in mind the fact that allergy and immunity are two altogether different properties, although they are each a part of the same process by which resistance to tuberculosis is produced in the group as well as in the individual. If it is understood that allergy as a manifestation of acquired resistance develops not only according to need but also with the self-immunizing power of the individual, it becomes clear why in practice allergy often appears entirely dissociated from immunity. In fact, a high degree of resistance, as already shown, may be present in association with a low degree of allergy, and in the same individual there may be a low degree of allergy at one time and a high degree at another. In practice the amount of what we have termed accumulated resistance can be estimated only by its effect. There exist no means of distinguishing or separating the two components of accumulated resistance, for while the tuberculin reaction directly indicates only the allergic response, this in turn is indirectly affected by the inherited factor. Thus one cannot be sure whether the level of allergy, as revealed by the response to the tuberculin test, is the measure of the one or the other factor. In general, therefore, conclusions based on the response to the tuberculin test may be very misleading.

TABLE 2.—*Interpretation of Allergy*

Allergy	Constitutional Fitness (Self-Immunizing Power)	Inherited Resistance
0 — +		+ + +
+ +	good	+ +
+ + +		+
+		+ + +
+ +	fair	+ +
+ + +		+
+ +		+ + +
+	poor	+ +
+ — 0		+

This table indicates that a low level of allergy may be associated with both high and low inherited resistance; that a very high level of allergy is mostly associated with low inherited resistance; that the level of allergy depends just as much on the need dictated by the resistance inherited as it does on the constitutionally conditioned power of the individual to immunize himself.

THE EFFECT OF RESISTANCE ON HEALING PROCESSES

It is not our object to discuss the effect of resistance on healing processes in any great detail, but it must be obvious that, if the principles which explain the development of various types of disease are sound, the same principles must be at work also in the various types of healing that are seen in tuberculosis. Disease as we understand it depends to a great extent on the multiplication of the bacilli in the body, which takes place because of inadequate inherited resistance; and when this disease occurs the infection must be opposed by acquired allergic resistance, which at best can only destroy or eliminate the bacilli that are already in the body. If this is successful, it amounts to arrest or healing of the lesions. But opportunities for reinfection are numerous and subsequent relapse frequently occurs. As acquired resistance increasingly develops, successful resistance and healing occurs and the bacilli become walled off in lesions in which they may remain viable for long periods of time, so that liability to relapse must persist until the individual brings up his resistance to such a degree that he can entirely and persistently inhibit the multiplication of bacilli in the body. Not infrequently we see cases of simultaneous healing or even complete absorption of numerous lesions in various portions of the body, which appears to depend on some change in that individual which specifically enables him to get rid of his disease and to heal the process. We would suggest that the explanation of this phenomenon may be that it occurs just when the accumulated resistance of the individual reaches the immunizing level of specific resistance.

THE RELATION OF RESISTANCE TO SPECIFIC THERAPY

Ever since the tubercle bacillus was discovered, the goal of all research has been to develop a specific cure which will successfully and completely combat the effect of this infection. Although this goal is still far distant, we believe that the most likely path leading to it is in this field of specific resistance. Much experimental work in animals has aroused hopes in this direction. That resistance to new infections can be modified by previous inoculations of mild or nonvirulent tubercle bacilli has been demonstrated. But their failure to attain more definite results may be due to the fact that in animals the inherited factor, which we conceive to be predominantly operative in man, is absent, and that further progress in specific treatment along the lines of artificially modifying resistance may depend on a better understanding of this phase of the problem.

CONCLUSIONS

We are offering our concept of resistance in tuberculosis in the hope that it may assist in explaining some of the puzzling epidemiologic and clinical questions that exist in tuberculosis. Part of this concept, particularly that of the rôle of inherited resistance, may appear to be hypothetical. But since this theory has helped us to correlate a great many heretofore incomprehensible facts of our experience, we hope that possibly it may point the way to future research and finally to a better understanding of this complicated and difficult subject.

133 East Sixty-Fourth Street.

Oxygen Want in the Stratosphere.—At about 12,000 feet altitude, there are usually objective signs of oxygen want which become progressively worse as altitude increases such that at from 15,000 to 25,000 feet unconsciousness occurs and at 20,000 to 30,000 feet the organism dies. Through the use of pure oxygen, oxygen want can be prevented up to an altitude of about 37,500 feet. At that altitude pure oxygen gives a partial pressure of oxygen in the lungs equivalent to that of the normal atmosphere at sea level. Above that altitude oxygen want again develops and unconsciousness will occur at about 45,000 to 50,000 feet. It was thus evident that other means of supplying available oxygen would be required.—Armstrong, H. G.: The Medical Aspects of the National Geographic Society-U. S. Army Air Corps Stratosphere Expedition of Nov. 11, 1935, *J. Aviation Med.* **7**:55 (June) 1936.

PATHOGENESIS OF TUBERCULOSIS

MAX PINNER, M.D.
ONEONTA, N. Y.

The characteristics inherent in bacillus and host which in their interaction determine the development of the disease are far too numerous to be discussed in the limited space at my disposal. As far as the bacillus is concerned, the pathogenically most important ones are its high resistance, its singularly complete adaptation to parasitic life, its relative virulence, the dosage of infection, and its chemical constituents which stimulate or alter more or less specifically different tissue elements. In the human host there are to be considered constitution with all its variables, such as intercurrent disease, age and state of nutrition, specific immunity, allergy, environmental conditions and what has been called the accidents of localization. This quite incomplete enumeration of pathogenically important factors is made only to emphasize their great multiplicity. Each one of these factors has been made the subject of elaborate study, often, unfortunately, with the result that a major or even exclusive importance has been attached to the particular subject under scrutiny. It is, however, quite obvious that no one single factor, with all allowance made for its quantitative variations, can possibly explain the protean forms of the disease tuberculosis. It is in the interaction of all factors that a valid explanation must be sought.

The first infection is in the vast majority by inhalation and the first focalization is in the pulmonary parenchyma. This first infection is with the extremely rare exceptions of transplacental inoculations acquired through outside sources, but the frequency of tuberculous disease throughout the population is still great enough that not by far all primary infections can be accounted for by a known source. The first infection causes two potentially permanent alterations in the host: it produces allergy and it establishes within the body a deposit of tubercle bacilli. In other words, from this event on the body is—probably for rest of its life—potentially exposed to two different sources of further infection: one within the body, making endogenous reinfection possible; the other the environment, which may cause an exogenous reinfection. That both mechanisms may occur is certain. Which mode of reinfection is predominant is one of the most vexing questions; it is the central problem in the pathogenesis of pulmonary tuberculosis in the adult, and it is the all important question for the epidemiology of the disease. Since lately much emphasis has been laid on exogenous reinfection, it might not be amiss to stress here the endogenous mechanism, without the intention of belittling the potentialities of the former. The opinion that favors the more or less exclusive importance of exogenous reinfection is based essentially on statistical work, comparing contact and noncontact groups. However, the groups examined are usually slum populations. One may well question whether the insanitary living conditions per se are not a most significant condition to make reinfection, be it endogenous or exogenous, possible. In other words, many persons may not and do not develop clinical disease though they are exposed to open tuberculosis; but, if the strain of slum conditions or intercurrent disease is brought to bear on the individual, he may succumb to his endogenous or exogenous sources of infection. For all practical purposes the problem resolves itself into the question whether living conditions in the widest sense of the word or whether exposure to an exogenous source of infection is the dominant factor in producing postprimary disease. The mere fact that painstaking epidemiologic studies are necessary to prove the greater frequency of clinical disease in contact than in noncontact groups is a strong argument against the sovereign importance of exogenous reinfection. No such studies were necessary to establish the contagiousness in many diseases even before their etiologic agents were known. On the other hand, the reality of endogenous reinfection is proved beyond doubt by the frequent occurrence of foci in localizations that could not possibly be reached by direct exogenous reinfection, such as the skeletal system, the urogenital tract or the brain. It seems important to arrive at a proper balance between the two opinions, because it will determine the most successful method of case finding and appropriate measure in the prevention of the disease and it will guard against an alarmistic attitude that threatens to bring back the time when tuberculosis was treated in the pesthouse.

Most case finding work is now based on contact examinations, but nobody knows whether more clinical cases would be found among ten thousand contacts or among ten thousand persons living below a minimum subsistence level. The same may be said with regard to population groups according to age, race or occupation, although the enormous differences that exist in tuberculosis morbidity between the white and the Negro races, between adolescent girls and mature men, between low and high income groups, are roughly known. These differences become obscured by the emphasis on exogenous reinfection without being explained by it. Overemphasis on exogenous reinfection is apt to cause an underestimation of the constitutional and socio-economic factors that play an important rôle in endogenous infections and that are sometimes more easily remedied than exogenous sources of reinfection.

The school of thought that denies the possibility of exogenous reinfection leans heavily on the results of animal experiments. With an extremely careful—and one might say lucky—balance between dosage of first and secondary infection, and with optimal timing between the two infections, it can be shown that a practically complete immunity against exogenous reinfection may be developed in infected animals. But this is possible only in the exceptional experiment. In the natural course of events such optimal conditions do not occur in human life. The immunologic change that is brought about in man by a first infection is, as a rule, not manifested by a complete resistance to exogenous reinfection but by the much greater tendency in infected beings to a stricter localization of the lesion and by a greater tendency toward productive and fibrotic lesions.

Whether a lesion is productive or exudative depends, according to some authors, entirely on allergy. While the immediate allergic reaction is well known in its histologic manifestations, the fact that, more often than not, exudative and productive lesions are found in the same lung in close proximity shows at once that one single factor, such as allergy, is totally inadequate to explain the two essentially different tissue reactions. Again the many different factors that determine the

From the Oneonta Tuberculosis Hospital.
Read before the Section on Miscellaneous Topics, Session on Tuberculosis, at the Eighty-Seventh Annual Session of the American Medical Association, Kansas City, Mo., May 13, 1936.

relation between parasite and host must be thought of. Exudative and proliferative tissue reactions are determined not by one condition, such as allergy or immunity, but by these conditions plus dosage of infection, plus constitutional characteristics, plus specific localization and so on ad infinitum. The essentials of practical importance that are known of allergy in tuberculosis can probably be expressed in two brief statements: 1. Allergy can be produced only by infection with (living or dead) tubercle bacilli. 2. Allergy accentuates and hastens the native tissue reactions against tubercle bacilli.

In corollary it should be said that neither exudative nor proliferative changes are in themselves malignant or benign. Either may heal or progress.

In the progression of tuberculous lesions is found probably the clearest expression of the differences between primary and secondary infections. The functional difference between the two is allergy; whether or not these differences indicate immunity in the reinfected person is not so much a matter of factual divergence of opinions as of arbitrary terminology. Pathogenically the differences are that in the progression of a primary lesion all available routes of propagation of bacilli come into play: lymphatics, blood stream, preformed channels, such as the bronchial tree, the intestinal canal, and the excretory ducts of the urogenital system. In secondary infections, dissemination through lymph and blood stream is quite infrequent, increasingly so with the increase of time elapsed between primary and secondary infection. Progression by continuity and through preformed channels continues unhindered in secondary infection. Thus as a characteristic example of progressive disease following more or less immediately primary infection is seen generalized miliary tuberculosis, frequent in childhood, rare in later life, and the characteristic progressive disease of adult life: tuberculosis limited to one organ system, such as pulmonary phthisis, rare in childhood, frequent afterward.

It remains now to describe briefly the most significant milestones of the morphologic aspects of pathogenesis. Be it said at the outset that an infinite variety of lesions occur, that only few can here be mentioned. But the few are chosen in such a way as to illustrate characteristic developments, so that practically all other lesions can be fitted somewhere in this general scheme, which in itself should provide a reasonably safe guide through the apparent maze of the disease tuberculosis.

The first focalization of bacilli occurs as a rule in the parenchyma of the subpleural layers of the lung, relatively rarely in the apex. The earliest lesion is a tuberculous pneumonia, which soon becomes surrounded by proliferative tissue changes from which a dense fibrotic capsule develops around the center, which in turn undergoes caseation and calcification. Simultaneously or somewhat later the mediastinal lymph nodes become involved through lymphatic transport of bacilli; they undergo rapid caseation and then show more or less completely the same retrogressive changes as does the parenchymal lesion. The most frequent development of this primary complex, consisting of parenchymal and lymphoglandular focus, is retrogression without clinical disease, leaving the unmistakable pathologic marks of a well demarcated parenchymal calcified focus and, frequently multiple, calcifications in the mediastinal lymph nodes. In this stage the tuberculous infection may remain and does remain in the majority of all infected persons a scar, as it were, which with allergy caused by the infection is then the only mark left. In some cases the parenchymal focus may progress by contiguous spread, causing extensive caseous pneumonias and excavations.

More frequently the parenchymal focus heals while the lymphoglandular focus smolders on for greatly varying periods, discharging at intervals bacilli into the lymph and blood stream; they may focalize anywhere in the body, causing bone lesions, urogenital disease, scattered lobular pneumonic foci usually in the upper portions of the lungs; or, if a massive discharge of bacilli from a liquefied caseous lymph node occurs, the result may be a generalized miliary tuberculosis. The borderline between the period of primary infection and that of those not infrequent early disseminations is too blurred to permit, as has been suggested, a strict differentiation into a primary and secondary stage, as in syphilis. Unlike untreated syphilis, the so-called secondary stage may never occur; or, again, it may manifest itself at any later stage of the disease. The foci created by early dissemination are, like any tuberculous lesion, subject to the potential developments—progression or retrogression; and, histologically seen, they may caseate, liquefy and excavate or fibrose and not infrequently calcify or apparently completely resorb.

Pulmonary lesions similar to those seen during childhood in the phase of early dissemination are sometimes seen in adults. It is likely that the majority result from lymphohematogenous spread from primary lymph node foci. The pulmonary foci—true hematogenous tuberculosis—are symmetrically seeded throughout both lungs. Not infrequently they heal clinically by resorption, fibrosis or calcification; others excavate and then continue the usual course of bronchogenic phthisis.

Following the more or less complete healing of the primary complex or subsequent to major or lesser manifestations of early dissemination, a latent period usually intervenes before tuberculosis in the adult develops. In many cases of early dissemination, no further clinical manifestations occur.

The typical pulmonary tuberculosis of adult life begins in most cases with a single, initially exudative, focus. There are essentially three mechanisms by which this clinically primary focus may develop: 1. A bronchogenic spread occurs from incompletely healed apical lesions, the remnants of foci produced by early dissemination. 2. Bacilli from a still active primary lymph node focus are discharged into the lymph stream, are carried into the blood stream and are filtered out in the lung. 3. Bacilli are inhaled from the outside. Regardless of the mechanism by which the new focalization takes place, the early lesion is a tuberculous lobular pneumonia, which is seen most frequently in the subapical region. This lesion is always unstable; it soon progresses or retrogresses. Demonstrable involvement of the regional lymph nodes practically never occurs. This exudative focus, the so-called Assman focus, or early infiltrate, or infraclavicular infiltrate, again is subject to all the potential developments: resorption, fibrosis, caseation, liquefaction, excavation. If a cavity develops, a frank and perilous source of bacillary dissemination is established, from which at any time new bronchogenic spread may occur. From this point on, bacillary propagation through preformed channels, and localized destructive lesions constitute the main character of the disease. Within the lung this means bronchogenic spread, and beyond its boundary it means ulcerative tuberculosis of larynx

and intestine. Every new focus is likely to start with a pneumonic lesion which is in no way different from the first early infiltrate, except that, owing to the potential massiveness of the bacterial invasion, it may be quite large and rapidly destructive. Progression and repair occur in succession or simultaneously, and the picture may further be complicated by hematogenous disseminations. The natural course of progressive pulmonary tuberculosis is, then, a series of bronchogenic tuberculous lobular pneumonias, which may heal or progress, fibrose or excavate; it is a series of pathologically acute phases of new focalizations and excavations, interrupted by periods of relative quiescence and partial repair. A patient with progressive pulmonary tuberculosis may finally die from progressive destruction of his pulmonary parenchyma; or, since repair is achieved principally by fibrosis, it becomes understandable that he may die eventually from the crippling tissue alterations that healing brings about.

Pathogenic considerations are incomplete without a discussion of the potentialities of healing. Part of this has already been mentioned. In brief summary, tuberculosis may heal spontaneously at almost any phase of its development; the exceptions are (1) massive blood stream infections, (2) focalization in vital regions (e. g., the fourth ventricle) and (3) large excavations with hard, fibrosed walls. In order of frequency, spontaneous healing takes place (1) in the primary complex, (2) in mild early dissemination, (3) in the early infiltrate. Once a cavity has developed, with its imminent danger of bronchogenic dissemination and hemoptysis, the chances of spontaneous healing are much lessened and they decrease progressively with the hardening of the cavity walls and with the involvement of more tissue. Since all therapeutic measures in pulmonary tuberculosis, including collapse therapy, are directed toward establishing conditions more favorable to natural healing mechanisms, the foregoing remarks on spontaneous healing apply equally to healing under any form of rational therapy.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. MILLER AND RAPPAPORT AND DR. PINNER

DR. HENRY C. SWEANY, Chicago: This complex subject has been covered by Dr. Pinner in the fewest possible words. The first infection usually begins in the lung as a rather sluggish or subacute pneumonic process and is made up of a definite cytologic picture of monocytes, lymphocytes entwined in fibrin, with a few polymorphonuclears scattered about and an occasional Langhans giant cell. The area may be from a secondary lobule to a whole lung in size, or there may be multiple foci. From this onset there is a gradual change throughout life, consisting of fibrous encapsulation, central caseation, calcification, resorption and ossification. Subsequent to the local lung lesion, there is that characteristic, inherent in all infections, to progress by the lymphatics. This progression goes toward the blood stream and affects the lymph nodes in a similar manner to the lung lesion, but it may vary quantitatively. It usually progresses onward, spilling over into the blood stream, causing a variable degree of dissemination into the lesser circulation and even on through the lungs again into the general circulation, localizing in distant organs. This lung and lymph node phase described first by Parrot was crystallized by Ranke into what he chose to call the first stage of the primary complex. The spilling into the blood stream was the second stage and the organ localization the third. Rightly or wrongly, he had a stage of allergy for each. The problem of allergy, however, is surely not so simple, as there is the complex problem of immunity involved. As the lesion ages it may either heal or spread, and in either case there result varying degrees of calcification, which were well described twenty years ago by Ghon and have since been known as Ghon foci. These primary lesions may vary with the type, dosage and virulence of the bacilli and with the constitution, race and especially the age of the host. A small pocket of bacilli may gain a special virulence in one lesion and not in another. A small or moderate sized dose with allergy may be overcome as a result of the allergy, but a large dose usually results in violently exudative lesions. Adult primary lesions tend to be more localized in the lung and are not so prone to calcify as those of children. Aboriginal races usually react more like children to primary tuberculosis. The sequela of healed phthisis is frequently an emphysema that varies in extent and degree as the original area of disease. Sometimes this emphysema incapacitates so much lung that the right side of the heart is embarrassed beyond recovery. Other late sequelae are bronchiectasis, abscess, atelectasis and distortion of bronchi and blood vessels, which cause variable degrees of distress.

DR. F. M. POTTENGER SR., Monrovia, Calif.: When the tubercle bacillus was accepted as the cause of tuberculosis, the previously held idea of heredity was thrown away, and it was thrown too far away. At the present there exists a leaning again toward the importance of heredity. Variations are seen in the reaction of individuals toward tubercle bacilli that can best be accounted for by differences in the patient's tissues. I like to think of the whole question of tuberculosis—infection, diagnosis and therapy—as being related to the body's physiologic reaction. When the numbers of bacilli are too small to produce infection, the normal physiologic response is able to destroy them. When the numbers are greater or more virulent, the reaction is still physiologic, but it is a quickened and heightened response. There is an attempt on the part of certain individuals to separate allergy from other phases of immunologic response. This, to my mind, proves to be confusing. Allergy is an intracellular reaction, physiologic in nature, by which the body acts quickly and energetically in destroying bacillary protein. It is only one part of the general physiologic response of the body toward infection; but it cannot be separated from the inhibiting influence on the growth and development of bacilli, the increased phagocytosis that is shown by the mononuclears, the development of the tubercle, or the increased permeability of the vascular bed surrounding the tubercle. They are all a part of the defensive mechanism. Certain research work of F. M. Pottenger Jr. bears on the body's physiologic response to tubercle bacilli. In the past three years he has been able to protect 30 per cent of three different groups of guinea-pigs from infection from virulent bacilli by treating them with adrenal cortex extract, and in the treatment of asthmatic children he had found seven to react at the beginning of treatment to No. 1 purified protein derivative tuberculin but who, after from six to twelve months' treatment, have lost their cellular reaction and fail to respond to No. 2 purified protein derivative tuberculin. I do not know just what this means, but it is in line with known knowledge that the medullary substance of the adrenal gland has an important factor in preventing anaphylactic and allergic reaction. The cortical portion acts synergistically with the medullary portion, and so by its use he has been able to protect against infection and also to change the cells of the body so that they no longer react with inflammation when tuberculoprotein is brought in contact with them. I look on this as a method of increasing the patient's normal physiologic reaction and making it possible for him to care for more bacillary protein without inflammatory response.

DR. JAMES ALEXANDER MILLER, New York: We have listened today, in Dr. Pinner's very brief and concise exposition of the pathogenesis of tuberculosis and in Dr. Sweany's discussion, to a very illuminating discussion of the basis on which we as clinicians must erect our structure of the understanding of and the treatment of this disease. I know that in my own particular case it has been true that my whole interpretation of the disease rests on the pathogenesis.

DR. MAX PINNER, Oneonta, N. Y.: I was pleased that Dr. Sweany emphasized progressive types of first infections, particularly since in recent years the so-called childhood type of infection has been frequently considered to be invariably benign. I do not know how this concept has originated, but it certainly is not borne out by facts.

INTRAVENOUS TREATMENT OF MENINGOCOCCIC MENINGITIS WITH MENINGOCOCCUS ANTITOXIN

ARCHIBALD L. HOYNE, M.D.
CHICAGO

It is necessary to scan the official statistics of a city or state in order to realize fully the high fatality rates that have usually prevailed for meningococcic meningitis. In Chicago, from 1916 to 1933, the fatality rate for this disease has exceeded 40 per cent in every year but one. This was in 1921, when the rate was 39.2 per cent. In 1925 and 1926 the fatality rates were 72 per cent and 65.9 per cent respectively. From 1916 to 1935 inclusive the total number of reported cases in Chicago was 4,028 and the average yearly fatality rate was 47.7 per cent. During the Detroit [1] epidemic of 1928 to 1931 there were 1,686 cases, with a fatality rate of 50.5 per cent. Tripoli [2] reported a rate of 65.15 per cent for patients treated in New Orleans in the years 1925-1934. In chart 2 is illustrated the expected and actual fatality rate per hundred cases for the years 1926-1935 in Chicago.

At the Cook County Hospital in Chicago, during a period of nineteen years prior to 1934, the fatality rate for meningococcic meningitis has varied from 35 to 90 per cent.[3] In those years all patients received serum intraspinally. At times, intracisternal, intraventricular, intravenous, intramuscular and intraperitoneal injections were resorted to, but only as auxiliary measures. Failures in treatment were frequently attributed to lack of agglutinins in the serum or to unusual virulence of the infecting organism. Although intraspinal therapy has been regarded as a necessity from the time the serum was introduced, response to this mode of treatment often has been most disappointing. The fatality rates mentioned are in accord with this feeling.

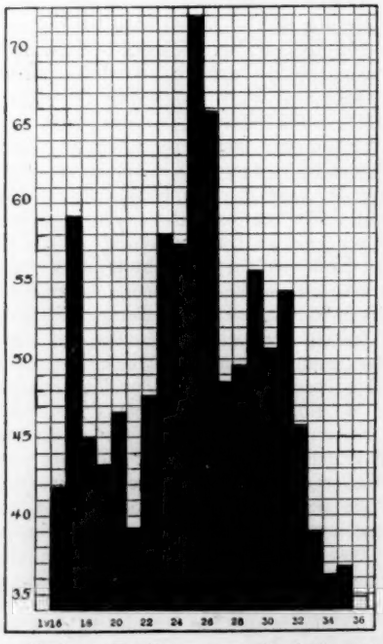


Chart 1.—Fatality rate per hundred cases of epidemic meningitis in Chicago from 1916 to 1935.

When evaluating fatality figures for meningococcic meningitis, certain factors should be given careful consideration. Age has quite as distinct a bearing on prognosis as the virulence of the infecting organism. This fact is disclosed in table 1.

All the patients represented in table 1 received Ferry's antitoxin [4] both intraspinally and intravenously. The fatality rate of 27.3 per cent for these 201 patients was regarded as very satisfactory. But it may be noted that for sixty-two patients who were 10 years of age or less the fatality rate was but 12.9 per cent. On the other hand, for eighty-three patients above the age of 20 the fatality rate was 45.7 per cent.

Is it proper to refer to the disease called meningococcic meningitis as an acute infectious disease of the central nervous system? Is there not justification in regarding the meningitis as a complication of an acute systemic infection? Such an interpretation is not far different from that which is now commonly placed on

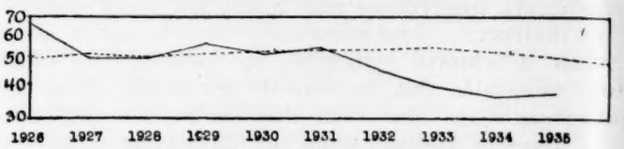


Chart 2.—Expected and actual fatality rate per hundred cases of epidemic meningitis in Chicago, based on ten year moving average (1926-1935). Solid line, actual fatality; broken line, expected fatality.

poliomyelitis—a disease in which "paralysis may occur, but not usually." As an inclusive term for all classes of meningococcic infection, the word "meningococcia" [5] has been suggested. Meningococcic nasopharyngitis, meningococcemia without evidence of meningitis, meningococcemia with meningitis, and meningococcus carriers would all be embraced by the one name indicative of meningococcic infection. This classification assumes that when meningitis develops it is secondary to a blood stream infection. Herrick [6] expressed such an opinion nearly twenty years ago in regard to the mode of travel of the meningococcus in the body. It is largely on the same theory that my associates and I have abandoned intrathecal therapy and concentrated our attention on the toxicity of the disease.

Our present procedure of treating patients for meningococcic infections is as follows: Immediately on admission to the hospital a sample of blood is obtained for culture. If the patient has petechiae, the blood culture is nearly always positive. Should there be little or no rigidity of the neck, a lumbar puncture need not be done at this time. Preparations are then made for intravenous therapy. Later, if the blood culture is negative, at least one spinal puncture is performed for the purpose of confirming clinical diagnosis.

It should be stated at this point that antimeningococcus serum or meningococcus antitoxin has been given to alternate patients in order to compare therapeutic effects. This was done irrespective of the age, day of disease, or condition of the patient. Whether meningococcus antitoxin or antimeningococcus serum is to be injected, it is given diluted in 10 per cent dextrose in physiologic solution of sodium chloride of at least twice the volume of the therapeutic agent. From 5 to 15 minims (0.3 to 0.9 cc.) of epinephrine is added to the mixture. It is then administered by the gravity method at body temperature. The flow should approximate about 60 drops per minute. If difficulty is encountered in inserting the needle, venesection is always justifiable. Any suitable vein in an extremity

From the Municipal Contagious Disease Hospital, Board of Health, and the Cook County Hospital, Department of Contagious Diseases.

Read before the Section on Pediatrics at the Eighty-Seventh Annual Session of the American Medical Association, Kansas City, Mo., May 15, 1936.

1. Gordon, J. E.: Medical Report of the Herman Kiefer Hospital, Detroit, for the Five Years 1927-1931, section XXII.
2. Tripoli, C. J.: Bacterial Meningitis: A Comparative Study of Various Therapeutic Measures, J. A. M. A. **106**: 175 (Jan. 18) 1936.
3. Hoyne, A. L.: Meningococcic Meningitis: A New Form of Therapy, J. A. M. A. **104**: 980-983 (March 23) 1935.
4. Ferry, N. S.: Meningococcus Antitoxin: I. Prophylactic and Therapeutic Tests on Guinea-Pigs, J. Immunol. **23**: 315 (Oct.) 1932.
5. Hoyne, A. L.: Meningococcia (Meningococcic Infection), Arch. Pediat. **52**: 418-421 (June) 1935.
6. Herrick, W. W.: Early Diagnosis and Intravenous Serum Treatment of Epidemic Cerebrospinal Meningitis, J. A. M. A. **71**: 612-616 (Aug. 24) 1918.

may be selected. Whether the arm or leg is chosen, the part should be immobilized on a splint. It is unnecessary to state that aseptic methods should be adhered to.

When meningococcus antitoxin is used the initial dose is usually from 50,000 to 100,000 units. The smaller dose may suffice for a child, the larger one for an adult. Thirty cubic centimeters of the unconcentrated antitoxin contains 10,000 units; therefore, by volume the quantity will be 150 cc. for 50,000 units, or 300 cc. for 100,000 units. If one of the standard antimeningococcus serums is selected, the dose is generally from 150 cc. for a child to 200 or 300 cc. for an adult. In either instance antitoxin or serum may be repeated at twenty-four hour intervals if it seems indicated. Frequently only one large dose of antitoxin or serum will be required. However, very recently we administered 100,000 units of antitoxin intravenously on four consecutive days. The patient was a woman who had been ill for six days prior to admission to the hospital. She entered in coma and continued in this state for three days after admission. She made a complete recovery without complications and was discharged after being in the hospital for twelve days.

Nearly all patients receiving intravenous therapy develop urticaria from five to seven days later. Seldom, however, are there any serious reactions. When the therapeutic agent is diluted as described, reactions are no more severe than when undiluted serum is injected intraspinally.

In table 2 are shown the results secured in the treatment of sixty-six meningococcic patients without resort to intrathecal therapy. In these cases the clinical diagnosis was confirmed by blood culture or spinal fluid examination in all but four instances. The patients were treated during the years 1934, 1935 and 1936 and constitute all patients so treated in the contagious disease department of the Cook County Hospital during those years up to April 11, 1936. Since January 1 of this year, no meningococcic patient admitted to either the Cook County Hospital or the Municipal Contagious Disease Hospital has received any intraspinal therapy. At the Municipal Contagious Disease Hospital, thirty patients have been treated in this manner between January 1 and April 11, 1936. For the latter group, the fatality rate was 20 per cent.

TABLE 1.—*Antitoxin Treated Cases According to Ten Year Age Groups*

Age	Cases	Deaths	Fatality, per Cent	Age	Cases	Deaths	Fatality, per Cent
Under 1	4	0	0	41-50	17	12	70.5
1-10	58	8	13.7	51-60	2	2	100.0
11-20	56	10	17.8	61-70	1	1	100.0
21-30	43	10	23.2	71-80	1	1	100.0
31-40	18	11	61.1	Unknown	1	0	0.0
Totals	179	39	21.7	Totals	22	16	72.7

	Cases	Deaths	Fatality, per Cent
Grand totals	201	55	27.3

In table 2 it will be noted that the fatality rate for all cases was only 11.8 per cent. What is still more significant is the fact that for the forty-three patients who were 20 years old or less, the fatality rate was only 2.3 per cent. For the thirty-one antitoxin-treated patients, irrespective of age, the fatality rate was 6.4 per cent. The fatality rate for all serum-treated patients was 14.2 per cent. This wide difference in apparent therapeutic efficiency between the antitoxin and serum groups is not usually so marked.

Additional figures illustrative of our results in the treatment of meningococcic meningitis without intraspinal therapy at the Cook County Hospital during the present year are as follows:

From Jan. 1 to April 11, 1936, fifty-two patients were admitted. Among these the fatality rate was 19.2 per cent. The average number of days of illness on admission for this group was 3.8. The average number of lumbar punctures for forty-two recovered patients was 2.1. The average dose of antitoxin per patient was 221,000 units, and the average dose of antimeningococcus serum was 363 cc. The number of hospital days averaged 14.5 for the antitoxin group and 15.3 for serum-treated patients.

TABLE 2.—*Meningococcic Meningitis Treated Without Intraspinal Therapy at the Cook County Hospital Contagious Disease Department*

Age	Sex: Male	Sex: Female	Total	Antitoxin	Serum	Recovered	Died	Fatality, per Cent
Under 1	2	0	2	1	1	2	0	0
1- 5	7	8	15	12	3	15	0	0
6-10	6	1	7	5	2	7	0	0
11-15	6	7	13	5	8	12	1*	7.6
16-20	4	2	6	3	3	6	0	0
21-30	12	2	14	3	11	12	2†	14.2
31-40	4	1	5	2	3	3	2†	40.0
41-50	0	3	3	0	3	2	1*	33.3
51-65	0	1	1	0	1	0	1*	100 0
Total	41	25	66	31	35	59	7	11.8

For forty-three patients 20 years of age and less, the fatality rate was 2.3 per cent.

For thirty-one antitoxin-treated patients, the fatality rate was 6.4 per cent.

For thirty-five serum-treated patients, the fatality rate was 14.2 per cent.

* Serum treated patient.

† One patient was treated with antitoxin and one was treated with serum.

The number of meningococcic patients treated exclusively by the intravenous route at the hospitals named was ninety-six. The fatality rate for the combined groups was 15.9 per cent.

When serum or antitoxin is administered in adequate dosage intravenously there is usually a marked decline in temperature, which may reach normal within twelve hours. If satisfactory response to the initial dose of antitoxin or serum is not apparent within twenty-four hours, the dose is repeated. Frequently in severe cases a second dose of antitoxin or serum is administered twelve hours following the first. If there are evidences of intracranial pressure two or three days after the beginning of treatment, a second lumbar puncture may be made. When this is done a pronounced decline in the cell count of the spinal fluid is usually noted. Often, too, a smear and culture of the spinal fluid will show the absence of organisms. This seems surprising when one considers the long accepted opinion [7] in regard to the necessity for bringing the specific serum into direct contact with the meningococci. During the past year we have frequently observed that patients with high spinal fluid cell counts and positive cultures for meningococci at the time of first antitoxin or serum administration intravenously will have low cell counts and sterile spinal fluids two or three days later. In some

7. Zinsser, Hans: Resistance to Infectious Diseases, ed. 4, New York, Macmillan Company, 1931, p. 597.

instances only a single lumbar puncture has been made, and even though meningococci were found on smear and culture no subsequent puncture was done. Such patients have made excellent recoveries without complications. The period of their hospitalization has been brief. In many cases it has been extended beyond the requirements of the patient merely for the purpose of complying with quarantine regulations. In Illinois the minimum quarantine is fourteen days from the onset.

As further evidence that intrathecal administration of an antiserum is not necessary in the treatment of meningococcic meningitis, attention is directed to table 3. Here nine patients are represented. No puncture was made on any one of these patients. The ages varied from 8 months to 6 years. All had petechiae. In each instance the blood culture was positive for meningococci. There was very little rigidity of the neck in most of the members of this group. In some cases the temperature was between 105 and 106 F. when intravenous treatment was started. One child was in coma and cyanotic when admitted to the hospital; he stopped breathing in the receiving room and was given artificial

TABLE 3.—*Meningococcic Meningitis: Intravenous Therapy Without Lumbar Puncture (1934-1936) at the Municipal Contagious Disease Hospital and the Cook County Hospital, Contagious Disease Department*

Patient	Age	Sex	Petechiae	Blood Culture	Units of Antitoxin	Serum, Cc.	Recovered	Died	Hospital Days
I. R.	5 yrs.	♂	++	+	80 M.	...	+	..	11
E. Mc.	4 yrs.	♀	+	+	.....	245	+	..	12
R. Mc.	4 yrs.	♀	++	+	110 M.	...	+	..	14
J. Mc.	8 mos.	♂	++	+	100 M.	...	+	..	13
L. L.	6 yrs.	♀	+	+	150 M.	...	+	..	13
W. W.	3 yrs.	♂	+++	+	120 M.	...	+	..	13
H. B.	1½ yrs.	♂	+++	+	.....	300	+	..	21
F. S.	4 yrs.	♀	++++	+	180 M.	...	..	+	3
A. M.	5 yrs.	♂	++	+	.....	270	+	..	11

Recovered Cases

Average dose antitoxin	120,000 units
Average number of hospital days	12.8
Average dose serum	271 cc.
Average hospital days	14.6

respiration. During the administration of 100,000 units of meningococcus antitoxin intravenously, his color returned to normal. Twelve hours later his temperature was approximately normal and he was mentally alert. His recovery was complete five days after admission, except for a serum rash that developed on his seventh hospital day.

Most of the fatal cases at the Cook County Hospital among those treated by the intravenous method exclusively occurred among patients who were extremely bad risks. For example an alcoholic patient, aged 39, a woman, aged 64, a patient with aortitis, and one with multiple fibroids and other pathologic conditions of the abdomen.

On several occasions, patients with meningococcic meningitis who appeared to be suffering from an overwhelming toxemia responded slowly to intravenous treatment. Usually these were patients who had been ill for a number of days before hospitalization. They assumed the picture of an encephalitis as the spinal fluid approached normal. Several patients of this character eventually made complete recoveries and have remained well after discharge from the hospital. In a few instances death occurred after the spinal fluid had been found negative for organisms by culture. Autopsies in these cases showed no evidence of meningitis but did disclose the presence of encephalitis, which we ascribed to the toxic action of the meningococcus. There was no pus in the ventricles, though in one case the ventricles appeared dilated; an internal hydrocephalus had probably developed. These changes seem to uphold still further the important part played by the toxic action of the meningococci.

When meningococcic meningitis patients are treated by the intraspinal route, opisthotonos is common. Increased irritation of the meninges is undoubtedly caused by the introduction of a foreign substance into the intrathecal sac. If this form of treatment is adopted early in the septicemic stage, meningitic signs almost invariably become more pronounced. As a matter of fact, it seems to me that meningitis may be induced when there was formerly no evidence of its presence. On more occasions than one, we have found that examination of spinal fluid withdrawn early in an attack of a meningococcic infection did not reveal the presence of meningococci, nor did a high cell count exist. In view of these facts, should we not devote more attention to the systemic infection and think less of the organisms? Too often the toxic action of the meningococci is ignored while intraspinal therapy is being carried out. Moreover, with intraspinal therapy, problems relating to blockage are sometimes encountered. Secondary infections are also a possibility which cannot be totally overlooked. The frequent subjection of the patient to discomfort, pain and perhaps permanent injury of the vertebral column as the result of numerous spinal taps is a further objection to frequent lumbar punctures.

Suppurative processes are seldom encountered when the patient is treated by the intravenous method exclusively. Panophthalmitis is one of the most serious complications of epidemic meningitis. This complication has not occurred in any patient receiving exclusively intravenous therapy. Endophthalmitis, iridocyclitis and optic atrophy have occurred, but neither eye nor ear complications have developed in any antitoxin-treated patient after this form of therapy has been instituted. The few eye and ear complications that developed in serum-treated patients we attributed to toxic rather than to suppurative influences.

Strabismus is not an uncommon complication early in the attack of meningococcic meningitis, although the condition usually improves during the course of treatment. Facial paralysis and even complete hemiplegia at the time of hospitalization have recently been noted among our patients. These cases happened to be antitoxin treated and recovered completely. Hydrocephalus is very common among infants when treated by intrathecal injections of serum. With exclusive intravenous therapy it is encountered much less often. The old theory that frequent lumbar punctures are necessary to prevent hydrocephalus seems doomed to the discard on the basis of our recent experiences. In fact, it seems to me that numerous punctures serve to induce a greater secretion of spinal fluid. Hypertonic solutions such as sucrose intravenously are often of value.

Thus far we have had no discharged patients who were treated exclusively by the intravenous method reenter the hospital because of recurrences. In the past, when patients were treated intraspinally, this was not an extremely rare happening.

COMMENT

1. The fatality rate for meningococcic meningitis at the Cook County Hospital during nineteen years prior to 1934 varied from 35 to 90.4 per cent. The average was 50.6 per cent.

2. Meningococcic meningitis is interpreted as a blood stream infection with accompanying toxemia. Meningitis is regarded as a complication.

3. The intrathecal method of therapy prolongs recovery of the patient.

4. Massive doses of the therapeutic agent intravenously are advised.

5. For sixty-six patients who received only intravenous treatment the fatality rate was 11.8 per cent. For forty-three of these patients who were 20 years of age and less the fatality rate was 2.3 per cent.

6. A total of ninety-six patients were treated exclusively by the intravenous route, with a fatality of 15.9 per cent.

7. Of nine meningococcic patients treated intravenously without any lumbar puncture, only one died.

8. Suppurative complications were not encountered with intravenous therapy. Fewer complications occurred with Ferry's meningococcus antitoxin than with antimeningococcus serum.

3026 South California Avenue.

ABSTRACT OF DISCUSSION

DR. ALBERT G. BOWER, Hollywood, Calif.: Dr. Hoyne reports forty-three cases under the age of 20 years treated entirely by massive intravenous doses of antitoxin. His fatality rate was only 2.3 per cent. It has long been noted that the younger age groups show the greatest response to therapy, with the lowest death rate, but a rate as low as this is almost unbelievable in the light of past experience. The reason for a lower death rate in younger children is difficult to explain in view of the work of Silverthorne and Fraser on the action of human blood on the meningococcus. They showed that the blood of most adults is bactericidal to a high degree, whereas children and infants possess little or no bactericidal property in their blood. Does this mean that those adults who acquire epidemic meningitis represent a particularly susceptible, nonreacting class with regard to therapy? The data regarding the shortening of the duration of the disease, the stay in the hospital and the lessening of complications are likewise most significant. It must be remembered, however, that when meningitis and its treatment are discussed, the disease as it is known in one's own particular geographic location is being discussed. Nearly all investigators have long held that the meningococcus and its products exercise a selective affinity for the cerebrospinal system, and that with the exception of the hematogenous type its appearance in the blood stream has been quite transient. If this is so, a humoral immunity must develop quite rapidly and be reflected in the circulating blood stream. Yet it does not get through the choroid plexus to reflect its antimeningococcic effect in the spinal fluid, for these patients do not get well until additional serum treatment is instituted. I am convinced that in at least some cases this must be true, for since January I have successfully treated four cases with the patient's own serum administered intrathecally, after the intraspinal administration of commercial antimeningococcus serum failed to effect a cure. All patients lived when their own blood serum was given by spinal puncture. Mehrtens' work, showing that in 20 per cent substances introduced into the blood stream do not get over into the spinal fluid, tends to afford strong support to this view. When antimeningococcus serum is to be used instead of antitoxin, the best clinical results will be obtained by selecting that serum which agglutinates most rapidly and in the highest titers the organism cultured from the individual patient.

DR. GERALD F. KEMPF, Indianapolis: Dr. Hoyne is to be commended for his courage in introducing the use of intravenous therapy alone. However, most of us would agree that in those cases which do not exhibit marked evidence of toxemia and bacteremia one probably should adhere, at least in some measure, to intraspinal therapy. His results, both with the antitoxin and with the antiserum, appear to speak for themselves. However, since the question of antiserum against antitoxin has been raised, I should like to say that last year my associates and I treated seven cases of meningococcic meningitis with antitoxin intraspinally and intravenously and lost the seven cases. At the same time we treated ten cases with antiserum and lost four. Conclusions cannot be drawn from such a small group, because I have seen as many as seven patients with meningococcic meningitis come into the hospital on the same day and all die within forty-eight hours. I should like to ask Dr. Hoyne whether, in his comparison, the 120,000 units of antitoxin in one group as against 271 cc. of unconcentrated antiserum in the other group is not actually 360 cc. of horse serum; in other words, the antitoxin treated group was getting 25 per cent more serum than the antiserum treated group. This may account for the small differences in mortality and morbidity.

DR. GILBERT J. LEVY, Memphis, Tenn.: It has occurred to me that in two diseases strikingly different methods of treatment have recently been employed: (1) In tetanus the recent teaching is that treatment by the intravenous and intramuscular routes is to be preferred to the time-honored treatment, that of spinal puncture and spinal therapeusis, (2) now the pendulum has swung in the case of meningococcic meningitis. It was formerly taught by Dr. Flexner that serum therapy by the spinal route was the ideal method and his results were strikingly good. Later, during the World War, Dr. Herrick urged large intravenous doses of the serum. This, too, combined with intraspinal therapy, proved effective. However, Dr. Hoyne's results are the best to the present time. Dr. Hoyne advocates the treatment by vein alone. My associates and I have attempted the use of the antitoxin during the past three years. In a series of over 200 cases our mortality was about 35 per cent. I must admit, however, that our intravenous medication has not been in the amounts advocated by Dr. Hoyne. This we intend to do. The death rate in our community has been parallel with that in Chicago. Our mortality average for a period of sixteen years has been about 50 per cent. However, during the past two and one-half years, with the use of the new antitoxin given both intraspinally and intravenously, the mortality has been reduced to 35 per cent. I should like to ask Dr. Hoyne whether it would be possible in the interest of economy to concentrate the antitoxin so as to make a smaller but a more highly concentrated dose.

DR. ARCHIBALD L. HOYNE, Chicago: There are great variations in the fatality rates of meningococcic meningitis in different sections of the country, and also in different years. We are comparing our present rates at the County Hospital with the years gone by, and while it is true that the fatality rate may rise again, the point is that at present it has never been so low, and therefore we think the treatment has a great deal to do with it. We have considered convalescent serum but have not administered it in the manner suggested by Dr. Bower. The idea of adding complement may be of great assistance, and perhaps in the future it will improve matters still more. The question of the permeability of the meninges is one that is often discussed. Exactly what happens may not be known but it is a fact that introduction of the serum in large quantities into the blood stream results in organisms disappearing from the spinal fluid. It is possible that, in the future, intraspinal therapy may be resumed. Our present results make it appear doubtful. In answer to Dr. Levy's question I think that if the serum should be concentrated it would be of great help. With Ferry's antitoxin we have not been concerned so much with the types of organisms as with the toxemia. Little attention has been paid to the power of the various standard serums to agglutinate. A few years ago, in Chicago, I followed cases in which serum was used and found that in many instances the best results were obtained with serums that did not agglutinate very well. It would be a great help to have the antitoxin cencentrated. At present 100,000 units of antitoxin means 300 cc. of serum. In other words, in 30 cc. of unconcentrated antitoxin there is only 10,000 units. A small amount of the concentrated antitoxin was made up in which 10 cc. contained 20,000 units. We have lost far fewer eyes and had very much less deafness with the use of the Ferry preparation than we have had with any of the standard serums.

OSTEOMYELITIS OF THE INFERIOR SURFACE OF THE PETROUS PYRAMID

WELLS P. EAGLETON, M.D.
NEWARK, N. J.

Our knowledge of infections of the petrous apex is still very primitive; it is in the same condition that mastoid infection was forty years, and Bright's disease one hundred years, ago for, like mastoiditis and Bright's disease, apicitis is a generic term, covering a large number of different pathologic states, the symptoms of which are modified by the surrounding parts.

Because of the peculiar nature of the bone, the pathologic process in the vast majority of cases has a tendency to (*a*) spontaneous cure—while about 15 per cent end in (*b*) abscess formation, many of which today are saved by well directed treatment, while a very few, I think about 5 per cent, continue throughout as (*c*) invasive forms of thrombophlebitis and are uniformly fatal.

The differentiation of the exact pathologic lesion present is of the highest surgical importance, as any ill directed surgery on the delicate endothelial blood vessels making up the sinusoidal spaces of the apex, which are the site of suppuration, only too frequently precipitates the very lesion that one is attempting to prevent, converting a local sinusoidal osteomyelitis into an invasive infection of the blood vessels, which rapidly spreads into the vessels of the meninges and cerebral tissues, causing either a fulminating meningitis or an infective meningo-encephalitis.

Thus each variety of petro-apicitis requires clinical differentiation because the specific line of treatment to be adopted depends not only on the nature of this lesion but on its anatomic position in the bone, if one is to prevent the development of a complicating, generalized septic meningitis, which is the cause of practically all fatalities from apical infections. For surgery in apical infections must have for its immediate and ultimate aim the prevention of a meningitis, or its cure if present at the time.

The petrous apex, from a pathologic and surgical standpoint, is divisible into three domains:

First the marrow-filled osseous matrix itself, with its dural coverings on its anterior and posterior surfaces. The red bone marrow after the completion of bony growth may become converted into pneumatized cells, which pneumatized bone, if infected, becomes the seat of (1) a sclerosing or a suppurative type of osteitis. If, however, an apex continues to contain acellular fat marrow, which is potentially capable of becoming cellular red bone marrow, possessing active immunizing properties against infection, the lesion in the apex brings (2) a reparative type of osteomyelitis—a plasma cell formation which also usually ends in a secondary osseous sclerosis. However, when the protective reaction in the marrow is overpowered by bacterial invasion it becomes the seat of one of the numerous types of infective osteomyelitis: (*a*) phlegmonous, (*b*) suppurative with the formation of pus (abscess of the apex), or (*c*) chronic cariogranulomatous osteomyelitis.

Second, the domain of the carotid canal, which, passing through the petrous apex, contains the carotid artery surrounded by its carotid venous plexus. Thrombophlebitis of the carotid plexus may give rise to (1) a local extradural abscess on the superior surface of the apex over the carotid artery, as the vessels here lose the bony covering. But phlebitis of the carotid plexus much more frequently causes (2) cavernous sinus thrombophlebitis or (3) an invasive form of thrombophlebitis of the small vein, the latter only too often giving rise to (4) a pial vein meningitis.

Third, the inferior "cribriform" perforated plate on the pharyngeal surface of the apex. Infection here causes (1) a localized abscess of the lateral pharyngeal roof. The suppuration in its effort to discharge externally may invade the soft parts of the lateral wall of the nasopharynx. Some cases of low grade infection take on (2) an invasive osteomyelitic caries of the base of the skull, which, extending great distances, forms multiple fistulas in the throat and neck. The infective process in the bone has a tendency to occasion a retrograde thrombophlebitis in any vessel that it encounters, generally terminating in death from meningitis and venous sepsis.

THE TWO SURGICAL LESIONS OF APICAL INFECTION: ABSCESS AND SMALL VEIN PHLEBITIS

Thus it may be stated that surgery of the apex resolves itself into two distinct lesions, namely, abscess formation, which requires evacuation, and infective thrombophlebitis of small vessels, which requires rest and patient watching until it in time either undergoes resolution or breaks down into pus, when that pus must be evacuated; but it must be evacuated at the point farthest away from any inflamed vessels that enter the dura. If quiescent infected vessels that pass through the dura into the meninges are surgically injured, meningitis is apt to result.

FISTULOUS TRACTS INTO THE APEX

It is now well recognized that if a fistula can be found anywhere in the domain of the tympanomastoid, whether it is in (*a*) the retrofacial area, (*b*) the peritubal area or (*c*) the angle of the petrosal, it leads into the part of the apex that is diseased, and the enlargement of the fistula furnishes adequate drainage.

FISTULAS POINTING TOWARD THE LATERO-PHARYNGEAL ROOF

My experience teaches that such a fistula should uniformly be sought in the lateral pharyngeal roof, as the pus from an osteomyelitic area of the apex situated below the transverse portion of the carotid artery and in the bend that it makes before entering the cranial cavity has a tendency to point downward into the latero-pharyngeal roof. And in such a case the base of the apex and the domain of its adjacent sphenoid occipital articulation should be surgically exposed and explored.

THE CRIBRIFORM PLATE ON THE PHARYNGEAL SURFACE OF THE APEX

An examination of the inferior basilar surface of the bony petrous apex reveals an area mesial to the fossa cochlearis and carotid orifice and below the transverse portion of the carotid canal, which is studded by many small openings. This plate I would designate the "petrous cribriform," because of its resemblance to the cribriform plate of the infant's mastoid, which during growth develops into the surgically important landmark Macewen's triangle.

Through the openings of the petrous cribriform plate pass numerous vessels from and into the tissues of the lateral pharyngeal and prevertebral spaces. These

Read before the Section on Laryngology, Otology and Rhinology at the Eighty-Seventh Annual Session of the American Medical Association, Kansas City, Mo., May 15, 1936.

small vessels are numerous during infancy and early childhood; that is, while the cranial basis is growing, becoming obliterated after maturity; although throughout life they remain potential pathways by which infection that originates within the apex may escape into the throat or from the throat may pass into the bone.

The petrous cribriform plate varies greatly in size in different bones, depending on the size of the foramen lacerum; it is set deep in the base of the skull, looking downward and slightly backward.

An abscess originating in the medullary substance of the cribriform plate generally points into the vaults of the pharynx behind and slightly mesial to the eustachian tube and may extend above and posterior to the tonsillar fossa, sometimes causing the supratonsillar region to project slightly forward.

A TRUE OSTEOMYELITIC MASTOIDITIS COMMON IN INFANTS AND CHILDREN BEFORE THE THIRD YEAR

Mastoiditis of infants runs a course which is characteristic of true suppurative osteomyelitis, for it is a blood space pathologic process: that is, suppuration within bone marrow spaces. This is why the mastoiditis of infants may give rise to toxic symptoms, diarrhea, and the like, which do not occur in infection which is confined to suppuration of pneumatic bone.[1] However, after the third year of life no trace of fat marrow is to be found within the domain of the mastoid apophysis[2] as mastoiditis after the second year is generally a local osteitis.

In infants and young children an infection from an apex is carried by lymph vessels, which causes the glandular enlargements and the lateral pharyngeal abscess, so frequently complications of otitis media of infants.

Later in life abscess of the lateral pharyngeal wall is not accompanied by a swelling of the cervical lymph nodes, the latter having undergone atrophy, since the protective mechanism of the throat passes from the lymphatic system into the compact bone protecting barrier with its covering of ever moving ciliated and glandular mucosa.

OTORRHEA AND LATERAL PHARYNGEAL ABSCESS IN THE VERY YOUNG

In the lateral pharyngeal abscess for a suppurating otitis of infancy, an operation on the antromastoid reveals little or no pus in the bone, but the bone spaces are filled with granulations,[3] which is the bone marrow's method of control of infection.

Osteomyelitis of the petrous apex with retropharyngeal abscess may be a Brodie abscess. The disease is directly below the periosteum, not involving the medulla extensively.

CAUSE OF FAILURE IN DIAGNOSIS OF APICAL SUPPURATION IN INFANTS

The presence of (*a*) enlarged lymphatic glands in the neck, with the absence of (*b*) obstructed breathing without any (*c*) mastoid redness or tenderness, has frequently caused the osteomyelitic nature of the aural suppuration to escape recognition. The lateral pharyngeal abscess may be overlooked for a considerable period.[4]

History.—H. C., a boy, aged 14 months, seen with Drs. L. A. Peer and H. Jackson, had had tonsillitis two and one-half months previously. Some weeks later he had a "cold," with an up and down septic temperature, associated with swelling of the glands of the neck. On the second day of the cold a paracentesis of the left ear was performed; the ear discharged freely. The following day the right ear was opened, but there was no discharge from it until several days later, when it discharged, spontaneously.

For three weeks prior to admission the child continued to have a septic temperature, ranging from 98.4 to 103 F., with a discharge from the ears.

Examination.—On admission to the Newark Eye and Ear Infirmary there was no mastoid tenderness, but a swelling was to be felt in the right lateropharyngeal region, which, however, apparently caused no difficulty in swallowing or breathing. The swelling of the glands in the neck extended to the mastoid tip. The right fundus showed a blurring of the disk. Blood culture showed streptococcus.

Roentgenograms furnished evidence of mastoiditis of both sides, for, although there were no definite areas of necrosis, the trabeculae were hazy in outline and there was a slight increase in density in the right mastoid near the tip.

Operation.—Double simple mastoidectomy was performed. The right mastoid was filled with granulations. The left mastoid contained granulations and a little pus.

The lateral pharyngeal abscess was opened, and a large quantity of pus was evacuated. Culture from the left mastoid showed Streptococcus nonhaemolyticus.

Prompt recovery followed.

The infrequent occurrence of petro-apical abscess is evidence of the active protective properties of its marrow against infection in contrast to the frequency of suppuration in the pneumatic bone of the mastoid process.

Suppuration of the mastoid very frequently follows otitis; on the other hand, a purulent collection of pus in the petrous apex occurs but rarely, although roentgenograms of the apex will demonstrate that it is very often the seat of an infection in cases of suppurative mastoiditis which present no apical symptoms.

Osteomyelitis of the apex with little or no otitis does occur, especially while the apexes are growing; postmortem examinations of infants and children reveal changes in the medullary substance of the apex and of the adjacent sphenoid basis without any evidence of an associated or of a preceding otitis.[5] One of my autopsies revealed little disease in the mastotympanic region, although there was extensive destruction of both apexes.

FISTULAS THAT POINT AND DRAIN INTO THE LATEROPHARYNGEAL ROOF

My attention was called to the tendency of the pus from an osteomyelitic area to point into the throat by the discovery post mortem of an abscess of the apex which was extradural and confined entirely to the posterior fossa, with bony caries involving the posterior surface of the apex and extending into the outer half

1. Dean, L. W., and Armstrong, Margaret: Nasal Sinus Disease in Young Children, Ann. Otol., Rhin. & Laryng. **28**: 453, 1919. Dean, L. W., ibid. **38**: 607 (Sept.) 1929. Daniels, Amy L., and Armstrong, Margaret: Nasal Sinusitis Produced by Diets Deficient in Fat-Soluble A Vitamin, J. A. M. A. **81**: 828 (Sept. 8) 1936, cited by Dean.

2. Hagen, E. W.: Acute Suppuration of the Temporal Bone, Arch. Otolaryng. **10**: 21 (July) 1929. He recorded that he could find no microscopic evidences of marrow substances in the complete serial sections external to the labyrinth in a patient who had died of a complicating meningitis.

3. Robertson, D. E.: J. Bone & Joint Surg. **9**: 8 (Jan.) 1927, cited by Beekman, Fenwick: Ann. Surg. **88**: 270 (Aug.) 1928.

4. Eagleton, W. P.: Retropharyngeal Abscess of Petrous Origin: Unlocking of the Petrous Pyramid for Localized Bulbar (Pontile) Meningitis Secondary to Suppuration of the Petrous Apex, Arch. Otolaryng. **13**: 386-422 (March) 1931.

5. This personal observation has been confirmed by Dr. J. Gordon Wilson of Chicago (personal communication); in discussion on Ballenger, Howard: Petrositis, Arch. Otolaryng. **17**: 728 (May) 1933. Glick, H. N.: Microscopic Observations of the Petrous Apex, Ann. Otol., Rhin. & Laryng. **42**: 175 (March) 1933. The author says: "The laboratory possesses one specimen (four years of age) in which no mastoid infection may be observed, but a severe osteomyelitis is present in the apex with dehiscence of the cortex."

of the clavus of the sphenoidal base. In the center of the carious area there was a hole which passed through the petro-occipital articulation and entered the pharynx mesial to the transverse part of the carotid artery.

During life the patient had not complained of his throat, and careful inspection showed only "thickening of the lateral pharyngeal wall" on the side of the osteomyelitis. Apparently a pinhole perforation, so small that it was undemonstrable even at autopsy, had allowed air to enter the extradural abscess, as the roentgenogram showed the large defect in the bone filled with air.

Out of about fifty verified cases of suppuration within the petrous apex, I have had six cases of osteomyelitis below the carotid, so the condition is far from infrequent. Of the six, only three caused a demonstrable fluctuating swelling in the pharynx. The other three cases presented large collections of pus below the carotid artery inaccessible to any operative approach from the aural region but probably curable by boldly perforating the bone of the petrous apex in the lateral pharyngeal roof mesial and slightly posterior to the eustachian tube.

SYMPTOMS

Osteomyelitis of the Petrous Base.—This is characterized by a disappearance of all apex meningeal symptoms with a continuation of the signs of bone sepsis, because the suppuration is under the carotid artery and away from the dura.

As in all osteomyelitic cases of the apex, there are signs of venous sepsis—a chill or a chilly sensation followed by an up and down temperature at the time of invasion, leading to a diagnosis of lateral sinus thrombophlebitis; and the jugular has been ligated by the attending otologist in more than one instance.

Exploration of the sinus fails to reveal any clot.

If an osteomyelitic focus suppurates and extends to the surface, the resulting abscess is in the vault of the pharynx behind and mesial to the eustachian tube.

Pharyngeal Symptoms.—In one of my cases slight difficulty in breathing on one side, disregarded by the patient himself, was the only throat symptom. And in a boy the pharyngeal swelling was discovered because he volunteered the information that a drop of water came out of his nose when he swallowed in a sitting position.

There is no difficulty in opening the mouth, as is characteristic of pharyngomaxillary abscess, the abscess forming posterior to the internal pterygoid muscle.

CONCLUSIONS

1. In every case of apical suppuration the lateral pharyngeal wall should be inspected frequently, as a perforating abscess from caries of the base gives few or no symptoms.

2. Osteomyelitis from aural suppuration limited to the petrous base below the carotid and the region of the petro-occipital articulation is a distinct entity. It can be diagnosed before the advent of meningitis, which is inevitable unless the suppuration "eats" through the thick bone of the base and discharges into the laterofaryngeal roof, or unless the bone is surgically perforated.

3. A technic has been anatomically evolved for the surgical perforation of the petrous base, through the mouth, under the sense of sight, for drainage of suppuration below the carotid artery.

15 Lombardy Street.

ABSTRACT OF DISCUSSION

Dr. George M. Coates, Philadelphia: The subject of petrositis is a comparatively new one, and great credit for its present prominence must be given to the pioneers Profant, Eagleton, Kopetzky and Almour, and others. Many divergent opinions regarding the anatomy, etiology and pathology of this condition were discussed, but in the last few years the whole subject has become much more clarified.

Gordon Wilson believes that pneumatization proceeds only from the already developed mastoid cells, that it cannot, in most cases, proceed actually into the apex during the growing period of the pyramid—that is, up to 15 years of age—that the majority of the pyramids, at least in his series of more than fifty cases, contain mostly marrow-containing or diploetic bone, and that the resulting lesion was therefore osteomyelitis. Cavities may be found at operation or autopsy, but these may be destructive bone lesions, abnormally large and infected marrow spaces as well as empyemas in pneumatic cells. Infection of the diploetic bone could have taken place by continuity but would be more likely the result of infection along the blood and lymph channels. The latter route has not been thoroughly studied. Symptomatology will vary according to the route of extension as well as the type of development, not only of the pyramid but of the mastoid process and the tympanic cells. Surgical approach must vary with the type and location of the disease, as must the entire management of the case. Many petrosal infections clear up without radical surgery, but we must prepare ourselves to recognize these cases for otherwise we shall lose patients because of waiting until the operative time has passed. Dr. Eagleton is chiefly concerned with osteomyelitis and calls attention to infections in the floor of the pyramid, in relation to the sphenoid and often associated with pharyngeal manifestations. Such cases usually occur in infants and children before adult characteristics of the bone have developed. The importance of this work, another phase of petrositis, cannot be overstated, because these cases are very apt to be overlooked until intracranial signs have appeared, or even after they have appeared, because of the obscurity of the lesion in the light of our present knowledge and because of its inaccessiblity. As Dr. Eagleton has pointed out in a previous paper, osteomyelitis has a tendency to self cure through the protective mechanism of the red bone marrow, a reticulo-endothelial structure. Pneumococci and hemolytic streptococci are the dangerous infective organisms, but a latent osteomyelitic process may be converted into a fulminating one by injudicious surgery.

Dr. Harold I. Lillie, Rochester, Minn.: That great good has come from the pioneer work of Profant, Eagleton, Kopetzky and Almour in calling attention to the clinical significance of petrositis must be readily admitted. Baldenwack in 1908 described the surgical approach that I suggested in 1932. The work of Baldenwack was unknown to me then, and so that I may not be accused of plagiarism I hereby gladly make acknowledgment of his priority. "Petrositis" is a good term. It is descriptive, inclusive, and covers both osteitis and osteomyelitis. The sources of development of the cells that extend into the pyramid should be fundamental knowledge. It is well to emphasize the importance of any pain, headache in any situation, and continuous discharge. If the clinical symptoms and signs give preoperative suggestive evidence of the tract involved, the surgical approach should be considered to be indicated. Rather than depend on repeated myringotomy for adequate drainage, it would seem safer to perform a radical type of operation on the mastoid in order to be sure that drainage would be continuous. I am not certain that extensive involvement on the under surface of the pyramid can adequately be exposed except by intracapsular destruction of the pyramid, a formidable procedure. A few years ago I suggested that the term "simple mastoid operation" was poorly chosen because of its implications. I suggested that the term "complete mastoid operation" more nearly met the requirements of good surgical principles suggested long ago by Küster. That is still my idea, even more strongly fixed than previously. How ridiculous it sounds to suggest that an operation seeking out the cellular extensions into the pyramid is a simple operation. I reserve the term "simple mastoid operation" for the procedure in which the tympanic antrum of children is opened. The mastoid operation

that was done generally some years ago probably could be called simple, for instance, when a subperiosteal abscess was opened and the defect through the cortex was simply enlarged for drainage. The correct interpretation of surgical pathologic change found at operation is important. In the type of case under discussion, if the surgeon expects to find fistulous tracts in the sense that pus will be found escaping from the situations suggested, his disappointment will be great. He more likely will find red, granular areas in the cancellous bone, which, when followed to white, nonbleeding bone, may lead to an abscess or to a region of osteitis. If a definite tract is encountered without purposeful search, adequate operation should be easily accomplished. In the past, meningitis from petrositis has been the cause of death in many cases in which the mastoid wounds apparently had healed and in which the untoward signs and symptoms may not have been recognized.

DR. MERVIN C. MYERSON, New York: I am in favor of scrapping such terms as "hypotympanic" and "epitympanic" and "supralabyrinth" and "infralabyrinth" for localized areas in the middle ear and mastoid. There are cellular tracts in the middle ear, there are prefacial and retrofacial cells, the retrofacial cells being inferior to the posterior canal; occasionally we find cells posterior to the posterior canal. A review of the literature has shown that a majority of the demonstrated fistulous tracts that have been found at operation and at autopsy were in relation to the superior canal. Twenty-nine of fifty-three fistulas which I collected from the literature were either anterior to the superior canal or posterior to it. Therefore it would seem that the first place to look for a fistula would be in that area. There seems to be a misconception as to what constitutes a fistula. The average man feels that there is an outpouring of pus through one of the cellular tracts. This is not the case. The reason these patients have pain behind the eye, or frontal headache is that the cellular tract through which the infection traveled into the petrous apex is blocked by granulations. Therefore one can't expect much, if any, discharge. A good deal of the profuse discharge from the middle ear in many of these cases is not necessarily from the petrous bone or the apex. Because there is infection in the petrous pyramid, collateral vascular changes occur in the middle ear which are conducive to increased exudate. I have found that there are two types of infections of the petrous apex. The one is the trapped empyema, a trapped collection of pus in which the patient invariably gets well if the pus is evacuated; the other is the type Dr. Eagleton has spoken of: I mean the granuloma forming type of infection. Two weeks ago a young girl had pain behind the eye and a little elevation of temperature and trouble in the petrous apex. I found no pus there. Instead I found the petrous apex area entirely replaced by granulation tissue and there was no longer any bone present. The inferior aspect of the petrous bone which Dr. Eagleton speaks of would seem to become infected more frequently by a fistula that travels into the apex area from the area below the level of the horizontal canal, that is, in the so-called jugular bulb area, when the jugular bulb is much below the level of the round window, or the subcochlear area, anteriorly. In 1924 Friedenwald of Baltimore reported a case that has not been cited in the literature until recently in which a man had a ninth, tenth and eleventh nerve involvement and severe headache for several weeks. He had a laryngeal paralysis on the same side. The symptoms did not subside until the abscess ruptured spontaneously. Several months later he still had his laryngeal paralysis.

DR. H. J. PROFANT, Santa Barbara, Calif.: It seems to me that if we have a word that is somewhat dramatic for the medical profession as a whole it attracts their attention and, as Dr. Lillie mentioned, it focuses one's attention. It is at the same time an inclusive term.

With regard to the tracts, I had the same difficulty. One mentions subcochlea and the various types, and the audience gets dizzy; one tells them about the epitympanic space, and they respond. Tell them about the antrum, and they are with you. Of course, in our own group we can go into these fine terms, but when one wants to describe it to others, one has to make it as simple as possible.

DR. WELLS P. EAGLETON, Newark, N. J.: I am pleading for a complete "unlocking of the petrous pyramid." Thus one sees every tract that may lead into the apex. The cases discussed today do not go on to recovery unless something is done that is not in the books. They generally begin with an osteomyelitis of the apex situated in the superior portion where an abscess generally occurs, but the medullary substance of the bone accomplishes the cure of the infection in the superior area, leaving however an area below the carotid canal that forms an abscess. I had a patient who had been to three eye doctors because of ocular pain with an abscess of the throat from an osteomyelitis of the apex. No one asked him about his ear; his ear did not bother him. Three days after he visited the last doctor, he died from fulminating meningitis.

There is something to be said in favor of all operative procedures in different cases, but osteomyelitis confined to the inferior surface cannot be reached by any aural approach.

In all operations around the petrous apex, one may tear the dura. If the dura is torn in one particular place it may cost the life of the patient. The dangerous place for a tear is just where the middle and the posterior fossae unite. The smallest pin-hole opening in that point lets out a little cerebrospinal fluid. Nothing is thought of it because one wants the cerebrospinal fluid out; but, if the opening is watched, one will see it go back and forth. There is a little pulsation, and this pulsation sucks infection into the subdural space. If it is a pneumococcus type III case, the next day the patient has a fulminating meningitis. To correct this defect I wanted a tissue that possesses local immunity. I argued that the submucosa beneath the mucous membrane of the mouth on the inner side of the cheek must possess such properties. I remove a piece with forceps from the inside of the mouth, cut it off freely and place it against the dural defect while still in the forceps. It unites immediately. This repair should be done uniformly. I have stopped two cases of discharging cerebrospinal fluid immediately by this method, and I recommend it. It is simple and takes only a minute to do.

THE PHYSICIAN'S PLACE IN THE HEALTH PROGRAM

W. W. BAUER, M.D.
Director, Bureau of Health and Public Instruction, American Medical Association
CHICAGO

The place of the physician in a community health program must be a central one. Public health relies in the last analysis on medical science. It is true other sciences are called on and that nurses, statisticians, educators, administrators and engineers make their contributions to a program of public health, but without the correlation furnished by medicine, progress toward better health would not ensue. There are nine reasons why the physician must be a central figure in any successful public health program.

The objective toward which physicians, health officials and voluntary health workers are attempting to lead the people is essentially an idealistic one. The conception of better health for all, with consequent economic, social and spiritual advantages to the healthy individual or group, is an ideal which was held by the medical profession as long ago as Hippocrates, whose aphorisms deal not only with the recognition and treatment of disease but with a philosophy of better health. Physicians have always exemplified this constructive idealism, sometimes to the extent of martyrdom. Michael Servetus was burned at the stake for religious and scientific heresy; Edward Jenner was reviled and ridiculed, Oliver Wendell Holmes and Ignaz Semmelweis were ignored, William Harvey was branded a quack, Ronald Ross struggled alone toward the conquest of malaria, and the modern physician sets his

Read before the Section on Preventive and Industrial Medicine and Public Health at the Eighty-Seventh Annual Session of the American Medical Association, Kansas City, Mo., May 15, 1936.

face with idealistic determination against a wave of socialistic collectivism which threatens to engulf him along with the community.

A successful program toward better health demands idealism, but it must also be a practical movement. The feet of the workers must be firmly planted on solid ground. The experience of the physician with the complexities of the human organism and the endless complications involved in its relationship to the environment cause him to develop a spirit of conservatism and caution. He is not always ready to concede that a single influence in the community will bring about revolutionary changes in disease conditions. He demands proof. Sometimes this makes him seem reactionary, but numerous instances might be cited in which a little more conservatism might have prevented ridiculous errors or even serious mistakes. Witness the enthusiasm with which toothbrush drills were promoted in the schools; observe the persistence of baby contests promulgated in the name of health; consider the widespread introduction of dinitrophenol for reducing purposes and its aftermath of cataract and other catastrophes. A little more conservatism, a little more critical scrutiny, a little less haste would have saved us from the ridiculous fiasco of toothbrush drills, the commercial racket of baby contests and the ghastly menace of dinitrophenol. The conservatism of the profession makes it an easy mark for lampoons by the thoughtless or the unscrupulous, but this very conservatism can be a valuable balance wheel which will help to keep the practices of public health within the bounds of scientific accuracy.

Idealism and practical experience require opportunity for expression. No one in the community has a greater opportunity than has the physician. One of the greatest problems of the health administrator is how he may reach the groups to whom he knows preventive measures must be applied, if they are to be effective. The well trained public health official knows that his tuberculosis work must be done among those exposed to tuberculosis; he realizes that diphtheria and smallpox immunizations must be carried out in the preschool group and preferably during infancy; he is quite aware that his educational efforts for better maternal hygiene must reach the expectant mother; he knows that control of venereal diseases depends on a knowledge of when, where and under what circumstances they occur. There is no group in the community which can more effectively bring together the public health worker and his desirable clients than can the physician. It is he who knows where preventive measures among his patients are most needed. It is he who can bring them most effectively to his patients. He needs the public health official, and the public health official needs him. There is no success for the public health official who ignores the medical profession in his community. Neither is the fullest measure of service possible to the physician who ignores his obligations toward preventive medicine. The public health official and the physician are natural cooperators; more and more the best trained health officials and the more progressive physicians are realizing this and are sitting down in conference to make their ideals bear practical fruit.

The medical profession as a whole has always accepted its obligations toward the public in a spirit of idealism tempered by experience. Among the earliest records of interest in the public health in the United States by organized groups of physicians are the reports of the yellow fever outbreaks which attacked New York and Philadelphia in 1793. In the *Transactions of the American Medical Association* for 1849 is an extensive report by the Committee on Public Hygiene[1] in which are discussed such questions as drainage, street cleansing, water, housing and ventilation, nuisances, disinfectants, and other matters relating to public health and hygiene. It is not generally known that the American Medical Association had a large part in the early development of the highly significant movement toward appraisal of public health work. The forerunner of modern appraisal methods was a report on state public health work carried out under the direction of the Council on Health and Public Instruction by Dr. Charles V. Chapin,[2] commissioner of health of Providence, R. I. Dr. Chapin's report was published in THE JOURNAL and reprinted in a valuable reference book which is much in demand, though now out of print except for a few precious copies. It is significant that this reference to the beginnings of public health work in the several states credits the beginning in many instances to the medical profession or to individual physicians. In many states, especially in the South, public health work is virtually directed by the medical profession. It is not intended, of course, to convey the impression that all physicians have met their obligations for community service; nevertheless the profession, as a whole, has been responsible for the initiation and continuance of much valuable work in public health and is now cooperative in many phases of it. This cooperation is illustrated by relationships which have been established by the American Medical Association through its Bureau of Health and Public Instruction with the National Education Association, the General Federation of Women's Clubs, the National Congress of Parents and Teachers, the National Committee for Boys and Girls 4-H Club Work, the State and Territorial Health Officers, the United States Public Health Service, the United States Children's Bureau. State and local medical societies are now working with local units of the National Tuberculosis Association, the American Society for the Hard of Hearing, the American Society for the Control of Cancer, with state and city health departments, schools, civic organizations, women's clubs, parent teacher associations, and other local groups too numerous to mention.

Public health, in common with all other branches of medicine, rests on research. Without research there is no progress. The medical profession, individually and collectively, has always been in the forefront of research. The existence of the Scientific Assembly and the Scientific Exhibit of the American Medical Association are in themselves powerful stimuli to research. THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION and the eight special journals offer opportunity for the publication of significant contributions. The Association itself makes grants in support of research. Significant contributions to research are made by representative members and Fellows of the Association and their allied workers through research laboratories in medical schools, governmental establishments and other institutions. Organized medicine has not only encouraged and participated in research but has defended it against the villainous attacks of the antivivisectionists, who deck themselves in furs and

1. First Report of the Committee on Public Hygiene of the American Medical Association, Tr. A. M. A. 2: 431, 1849.
2. Chapin, C. V.: State Public Health Work, Chicago, American Medical Association.

feathers while they shudder at the thought of stimulating the muscle of a dead frog with an electric current. Legislation intended to cripple medical research has been fought in the Congress of the United States and in the several state legislatures by research workers and medical societies. The influence of organized medicine has consistently been exerted in defense of an apathetic public which has not yet realized how its security is threatened by a small noisy group of fanatics.

The physician knows community health needs in a peculiarly intimate manner possible only to physicians and the clergy. The statistics of public health are built up from observations and reports originated by physicians. The United State Public Health Service carries in *Public Health Reports* the standing heading "No health department, state or local, can effectively prevent or control disease without knowledge of when, where and under what circumstances cases are occurring." [3] This is as true of other health problems as it is of communicable diseases. The intimate relationship of the physician with the patient, which itching reformers would like to destroy and replace with a bureaucracy, renders the physician better able to understand the real health problems of the community than any one else. Some of the problems that have failed of solution by existing methods are being attacked by new methods in which the physician is the central figure. A case in point is syphilis, which has been characterized as the next point of attack in public health. Reporting of syphilis has not been successful; quarantine of syphilis has found few with the courage to attempt it; treatment of syphilis in public clinics has been only partially successful in controlling the scourge. Now the attack is being concentrated through the channels of medical practice. In this plan, the privacy of the patient is respected and he need confide only in his doctor. If he is unable to bear the expense of treatment, community help in the form of laboratory service and free materials is available through the family doctor. Where this plan has been given a genuine trial, there is evidence that a reduction in syphilis has actually begun and may be expected to continue.[4]

The physician must have a central place in the public health program because he commands public confidence. The ancient ideals of the medical profession have been made the butt of gibes by irresponsible magazine writers, who cannot or will not understand that a profession may actually be motivated by a genuine and unselfish regard for the public interest. Despite these superficial evidences, there is plenty of indication that the fundamental confidence of the people in their doctors remains unshaken. Every health officer knows that his recommendations for immunization and other preventive procedures are regularly checked by mothers against the opinion of the family doctor. This is as it should be. It must be encouraged and extended.

Another field in which the physician can make great contributions, has made them and continues to make them, is health education. Since the very beginning of medical practice, it has been the habit of physicians to advise their patients not only about treatment but about prevention. This has been a person to person relationship, and this relationship will continue to be necessary in our attacks on the great health problems of today; namely, cancer, apoplexy, kidney disease, syphilis, diabetes, heart disease and the evils of self diagnosis, self medication and the nostrum racket. The fight against quackery has been prosecuted with more vigor and success by the medical profession than any other agency. The only authentic health magazine for lay readers, with nation-wide circulation, is published by the medical profession. The only nation-wide dramatized radio health program of noncommercial character is a joint contribution to health education by the American Medical Association and the National Broadcasting Company.

The picture I have tried to paint is not a completed canvas. Not every physician measures up to the ideals that have here been pictured, but the profession, as a whole, may fairly be said to have done so. It is not a finished picture; neither is it merely a dream toward which nothing has been done in the way of fulfilment. It is a sketch of which the larger outlines are definitely visible but in which many details need to be filled in. The challenge to the practicing physician of today is to take that central place in the public health program in his community which belongs to him by right of tradition, training, qualifications, and public interest and necessity.

535 North Dearborn Street.

3. Pub. Health Rep. **51**: 340 (March 27) 1936.
4. Social Hygiene in England and Wales, Health News **2**: 202 (Dec. 17) 1934.

ABSTRACT OF DISCUSSION

DR. GEORGE M. LYON, Huntington, W. Va.: That the physician should occupy a central place in the community health program is appreciated more clearly today than ever before. Attempts to promote medical participation in community health matters as an organized program are being initiated with increasing frequency. Such attempts indicate the desire of the medical profession to go along in the promotion of improved community health programs. It is not always easy for the individual physician to see just where his particular responsibility lies. Much of the time it is because in his medical training he was not encouraged to develop that philosophy which would enable him to understand just what his specific responsibility might be. At other times it is because the local health officer fails to understand the importance of bringing the individual physician actively and sympathetically into the program. There is no more effective way of blocking progress in a health program than by antagonizing the local medical profession or relegating the individual physician to the background. Health officials who will provide the leadership and the opportunities for the local physicians to participate in the public health program in an organized way will do much to promote health protection. When such organized participation occurs, the physicians are generally quick to sense and in a constructive manner to accept their individual responsibility. Where health officers provide leadership in such programs, much will be accomplished in promoting that team work which is so essential between the medical profession and the official health program. It is essential that every effort be made to clarify in the minds of the physicians and official health workers just what the functions of the public health program, the school health program and the medical relief program are. I believe that this differentiation must be made in order to clear up the confusion generally encountered not only in the minds of laymen, but likewise in the minds of the physicians and health workers. Public health leaders are particularly aware of the misunderstanding that the average physician has about what is the function of the public health program, of the school health program and of the medical relief program. The confusion resulting from having the medical relief added to the public health program has been very detrimental to the development of proper public health programs. We have attempted in our own local county society to administer the school health program. In it a clear distinction is made between the essential objectives of the three programs.

DR. STANLEY H. OSBORN, Hartford, Conn.: I was hoping that Dr. Bauer's paper might tell us how to do the things he is talking about. All of us want to do what Dr. Bauer has outlined; namely, to bring about a closer cooperation between the physician and the health officer. That is what we are really trying to aim at, to get our city and state societies associated with committees of state health officers, or the city health officers. Such a state of affairs would make it possible to tackle a new problem like, say, immunization against undulant fever. We as health officials are trying to think of the medical men and the medical societies as our right hand or part of us in carrying out this public health work. By doing that we shall automatically accomplish the right thing the way we see it not only as health officers but also as physicians, and the result will be not only a program but a program of physicians and of health officers.

DR. W. W. BAUER, Chicago: I was careful not to get down to particulars, as Dr. Osborn remarked, because I was conscious of the fact that particulars are one thing in Connecticut and another in New Mexico. In the last few weeks I have visited New Mexico, Arkansas, Alabama and Washington, D. C., besides being in Chicago, and the tremendous range of different conditions that one encounters in such a series of trips convinces one that there is absolutely no way of arranging cooperation in accordance with any one plan. Dr. Lyon has pointed out a way in which they have done it in West Virginia. If you write to different places, of which a few come to mind now, one being Nassau County, N. Y., the Medical Society of New York and the Medical Society of Wayne County, Mich., and the Detroit Health Department, you will find different ways of doing things, and yet they are all based on the same fundamental principle. Here and there county societies and health commissioners are taking steps to get closer together. In many places it seems to be desirable to have a community health council. There is an excellent report on community health councils by Professor Hiscock of Yale, which deals with the Allegheny County situation in Pittsburgh (Appraisal of Public Health Activities in Pittsburgh, Pennsylvania, 1930-1933, Pittsburgh, Federation of Social Agencies of Pittsburgh and Allegheny County, 1935, $1). It shows how a community of people have sat around a conference table and studied their situation and evolved ways to meet their needs. There was an exhibit in the Scientific Exhibit at which it was possible to get diagrams of a health conservation set-up here in Kansas City. I want to emphasize that in mentioning these particular instances I have no intention of creating the impression that these are the only ones. There are many others that are accomplishing the same quietly and unostentatiously, and perhaps without any conscious plan the health department and the medical society are getting closer together for mutual cooperation. It used to be taken for granted that there was cooperation. There was a time when we were far apart, and yet today we find a gratifying number of health officers who are members of this section of the American Medical Association, as well as a gratifying number of American Medical Association members who belong to public health organizations. I hope that that will continue and that every possible means will be employed to avoid misunderstandings and that we foster and create cooperation and good will in the interest of public health.

Syphilis Almost Rare in Sweden.—The commission was convinced that syphilis has decreased in prevalence in Sweden to the point where one may refer to it as almost a rare disease, there having been reported in 1934 only 1 new case in 14,000 population, a case rate of 7 per 100,000 population, as compared with a case rate of 20 per 100,000 in Denmark. Lacking a basis for comparison with case rates in this country this would indicate that syphilis is as rare in Sweden as typhoid fever now is in New York City.—Report of the New York City Commission to Investigate the Prevention and Control of Syphilis and Gonorrhea in Scandinavian Countries and in Great Britain, *Am. J. Syph., Gonor. & Ven. Dis.* **20**:37 (July, part 2) 1936.

ATHLETIC INJURIES

MARCUS H. HOBART, M.D.
EVANSTON, ILL.

Owing to the present widespread interest in athletics, the study and care of athletic injuries is forcing itself more and more on the attention of the medical profession. We as physicians cannot hastily brush them aside, treating them like any ordinary injuries, but must appreciate that they are in a class by themselves and demand special attention.

The athlete, whether college or professional, has a relatively short life in this capacity. A college athlete's span of activity is limited, as a rule, to three years, or at most four, with a few notable exceptions. While a professional athlete's tenure of office may extend through three or four presidential terms, most of them end before the year that national presidents are eligible to hold office. While their life may begin at 40, their athletic prowess or usefulness ends by then.

This short span of athletic usefulness demands, then, that acme of fitness during its existence. The treatment of athletic injuries is therefore essentially the treatment of traumatic conditions with the added necessity of getting the athlete back into shape as quickly as possible. It is important from the athlete's standpoint to return him to his team quickly and 100 per cent recovered, but the most important requirement is to return him safely. The latter from a purely medical standpoint is the real requisite; i. e., to have the athlete return to practice and play only when it will do him no damage. The situation can be compared to the medical one in France during the World War. The medical officers were required to return the wounded soldier in condition for the front line trenches as quickly as possible, apparently with the fear that the war might end too soon! The doughboy must not only be repaired but repaired without delay, so that he could stop a few more bullets before he escaped. The athlete, however, is most anxious to get back, as actually his athletic life depends on it.

In the prevention of injuries there are many important points to consider.

In the first place the physician should be in full control of the physical side of the team, as the head coach is in charge of the athletic side. They should work together. Under the doctor and the coach there should be trainers, masseurs and physical therapists whose duty it is to keep the men in condition, but any special treatment should be prescribed by the doctor and supervised by him. Complete harmony should exist between all those in charge.

All athletes should have a physical examination at least each season. The heart, pulse and lungs should be checked over, examination made for hernias, and any other abnormalities noted. There should have been a recent successful vaccination against smallpox. These things are done each fall at Northwestern.

All injuries should be reported immediately to the team physician. Players, trainers and coaches should get it into their heads that they will save time and benefit the team by getting help from the doctor. It

Read before the Evanston Branch of the Chicago Medical Society, April 2, 1936.

From the Surgical Department of Northwestern University Medical School, Chicago.

is thus possible to save many days of disability and actually get and keep men in play, or for important games, who never could have played had they delayed reporting.

After reporting, a player should take only such treatment as the doctor prescribes. As Dr. Marvin Stevens [1] says, "many a player has been severely injured by having ignorant trainers, players or coaches try to 'jerk something back' in place about which they knew nothing, when a skilled physician could have fixed the player without damage."

It is not necessary to enter on a diatribe against the various cults, but it might be said that there have been numerous illustrations of the harm done to athletes by those all too willing gentry.

The coach's particular job is in preventing injuries, first, by getting the men into good physical condition before contact work is assumed and, secondly, by teaching his men how to take care of themselves on the field, especially in football. They should be taught the proper methods of tackling, blocking and falling. Stevens's book takes these up in great detail. It is true that many injuries, if not most, occur in an awkward, green player, or one who is off his guard, or loafing. Of course there are notable exceptions. Thirdly, proper protective equipment should be worn by players at all times.

Now for the actual care of injuries. A good athletic doctor, like all physicians, has the patient's interest at heart. In treating athletes he may allow a little more latitude in his care, but he should always see to it that no permanent or serious injury is the result of returning too soon to active play.

With this in mind, serious injuries are treated as such. A fracture practically always keeps the player out. Like any other fracture, it requires emergency splinting and treatment. Reduction should be done at a hospital with x-ray equipment, and fixation should be maintained long enough. Practically always a cast should be used rather than a splint, as the cast cannot be so easily removed. The general rule is to use a cast for children, athletes and idiots—and recently there has been added to this list a fourth—doctors.

Another very important part of fracture treatment in athletes is the subsequent care. Mobilization is

TABLE 1.—*Conditions Treated*

Year	Totals	Injuries	Inflammations
1930	133	99	36
1931	134	100	34
1932	138	101	37
1933	145	133	12
1934	135	125	10
Totals	687	558	129

important. In ten days after reduction and at least biweekly thereafter, the limb should be removed from the cast, manipulated, active and passive motion used, and physical therapy soon instituted. Massage and diathermy are used in every case. This gets the muscles toned up, so that when the bone is healed function will be present without delay.

Skull fractures and neck fractures should keep the athlete out of play at least for the season, usually for a year. In many minor fractures, with adequate protection the players may be allowed to carry on sometimes. These may include fractures of the phalanges, hand, wrist, forearm, fibula, and even ribs and clavicle on occasion. Once a player with a fracture of three transverse vertebral processes was allowed to return after three weeks' rest in a cast. This is rather too risky.

Sprains, although not so serious as fractures, give much trouble. The usual offending joints are the ankle, knee, shoulder and phalangeal. Prophylaxis demands protection. The ankle is strapped by means of the basket-weave with adhesive tape.[2] This has been done

TABLE 2.—*Types of Injuries*

Year	Fractures	Sprains	Contusions Concussions	Dislocations	Lacerations	Inflammations	Cartilage	Operations	(Majors)
1930	19	35	15	1	11	36	16	50	(8)
1931	23	28	20	8	11	34	11	49	(10)
1932	18	28	34	1	8	37	10	32	(6)
1933	22	47	27	8	15	12	13	21	(9)
1934	27	29	31	6	11	10	21	25	(11)
Totals	109	167	127	24	56	129	71	177	(44)
	(3)	(1)	(2)		(5)		(4)		

The figures in parentheses show the relative frequency

for every game and scrimmage very effectively at Northwestern. The shoulder is protected by a leather shoulder pad, worn under the sweater. Knees may be strapped with adhesive tape but are almost impossible to protect adequately. Hinged braces help somewhat but for the most part are too cumbersome and are not adequate. Adhesive tape about the wrist will give some protection.

When a sprain has occurred in any joint, I have it packed first in ice whenever possible. It is then fixed snugly with adhesive tape or a bandage. Procaine hydrochloride has not been used, but it may be justified in view of Leriche's [3] recent work. The ankle is strapped with pressure on the tender sprained spot. For the knee the adhesive strapping lengthwise, criss-crossed with a pad on the tender spot and a half inch thick cotton bandage over all, is useful. The shoulder is sometimes strapped, with the arm to the side, or the arm carried in a sling, neither of which is very satisfactory. If these joints do not respond to this treatment, they are put at rest in a cast for six weeks. Mobilizing and after-treating is done as in a fracture. Players with these sprains are sometimes allowed to carry on through the season and casts not used until afterward. There have been very few severe sprains that would not respond to this treatment.

Contusions and bumps are usually treated first with ice and later with heat. Sometimes a "hot pack" is applied over night. This consists of glycerin or analgesic balm and tends to keep the swelling down. Later contrast baths, diathermy and massage are used. Most contusions respond to this treatment quickly.

Dislocations occur chiefly in the shoulder, elbow and phalanges. These should be reduced immediately, theoretically after an x-ray examination shows no fracture. It is poor treatment to leave a joint dislocated any length of time when it can be reduced easily. After reduction the joint should be held at rest for two or three weeks, with some motion after ten days. This rest is important to obviate a myositis ossificans, especially in the elbow joint.

1. Stevens, M. A., and Phelps, W. M.: The Control of Football Injuries, New York, A. S. Barnes & Co., 1933.

2. Lewis, Dean: Practice of Surgery, vol. 2, chapter 5, pp. 43-44.

3. Leriche, René, and Aenulf, G.: The Treatment of Sprains by Interligmentary Injection of Novocaine, Am. J. Surg. **32**: 45-47 (April) 1936.

Myositis ossificans is one of the arguments in favor of rest after injury, not only in dislocations but in sprains about the joint and in contusions. A "charley-horse" in the thigh is a potential myositis. These are treated first with ice and then with diathermy and rest, if need be in a cast. Operative removal of the newly formed bone is advised only after the condition is quiescent, if bone is formed in the quadriceps muscle and if pain or loss of function persists. A cast and diathermy will take care of most of these, without massage.

In recurrent shoulder dislocations the combination operation is used—a Clairmont combined with a

TABLE 3.—*Anatomic Location of Injuries*

Year	Abdomen	Ankle	Arm	Back	Bowel	Clavicle	Coccyx	Digits	Ear	Elbow	Eye
1930.....	..	6	3	3	1	1	1	16	5	1	..
1931.....	4	8	2	3	2	2	..	13	2	10	1
1932.....	1	12	5	2	..	1	..	11	2	5	1
1933.....	3	17	5	8	9	1	..	19	2	5	3
1934.....	3	10	1	6	2	..	..	7	2	3	2
Totals.....	11	53	16	22	14	5	1	66	13	24	7
		(3)		(9)				(2)		(8)	

TABLE 3.—*Anatomic Location of Injuries—Continued*

Year	Face	Foot	General	Genitals	Hand	Head	Hip	Iliopsoas	Inguinal	Knee	Leg
1930.....	4	7	7	2	11	2	1	1	4	22	3
1931.....	4	3	7	..	6	2	1	..	1	22	5
1932.....	5	1	1	..	4	3	..	..	1	20	4
1933.....	7	4	15	1	3	2	..	..	1	17	3
1934.....	5	6	20	..	6	4	..	..	..	29	7
Totals.....	25	21	50	3	30	13	2	1	7	110	22
	(7)	(10)			(5)					(1)	(9)

TABLE 3.—*Anatomic Location of Injuries—Continued*

Year	Lip	Mouth, Throat	Neck	Nerve	Nose	Perineum	Shoulder	Sinus	Thigh	Thorax	Wrist
1930.....	3	7	4	2	7	..	1	1	1	2	6
1931.....	..	4	3	2	7	..	5	3	3	5	4
1932.....	1	..	5	2	5	..	9	..	1	3	10
1933.....	1	2	4	4	12	..	14	1	3	..	2
1934.....	2	..	1	1	14	1	16	..	5	4	4
Totals.....	7	13	17	11	45	1	45	5	13	14	26
					(4)		(4)				(6)

Nicola.[4] This has given success in two cases and must be tried more to be proved. It does seem to be the most physiologic and at the same time most complete of any operation so far devised.

Lacerations and cuts are cleaned out thoroughly and closed loosely with a drain inserted and a wet boric acid dressing applied for twenty-four hours. The question of antitetanic and antigas serum is always to be considered. Sutures about the face are removed in from three to five days to prevent stitch scars, unless the player is to scrimmage or be in a game, when the sutures are left in longer. Bandages on the face only excite opponent players of certain types to tear them off. Consequently during the game a collodion dressing is used, which is removed immediately after.

All scratches and cuts are dressed as soon as possible with an antiseptic dressing, after cleansing. Inflammations require hot boric acid dressings or hospitalization, if continued.

A word about the knee is indicated, as there are more injuries to the knee than to any other part. Because of the careful protection given ankles, the knee perhaps suffers as a consequence. With the ankle strapped properly it is protected, and this puts more strain on the knee. It is important to diagnose a knee injury correctly and differentiate a contusion, a sprain, semilunar cartilage injury and a fracture. This can be done if one does not omit the x-ray examination. Of the 110 knee injuries in the five year period investigated, seventy were diagnosed cartilage injuries and twenty were operated on. All recurrent semilunar cartilage injuries require removal of the meniscus. This should give a knee functioning 100 per cent. Athletes can be named as postoperative illustrations, playing football, basketball, handball and tennis or engaging in track athletics without handicap. This operation, while delicate, is safe when done by some one experienced. One would not choose to have the knee operated on by an inexperienced general practitioner or by most surgeons, as considerable damage can be done. A special knife and scissors are used and many of these cartilages come out through a small incision.[5] If the cartilage has been dislocated only once, reduction and fixation in a cast for six weeks may be tried; if twice or more, operation is indicated.

Besides these usual injuries, there have been many unusual conditions: nerve injuries with paralysis of the brachial plexus and of the peroneal nerve, the latter requiring operation; a halfback with a gunshot injury of the left hand, resulting in a compound comminuted fracture, treated by débridement and diluted solution of sodium hypochlorite (modified Dakin's solution), with complete recovery; a cheer leader with a sprained wrist from yelling; a golf player with tuberculous pleurisy; several college athletes with concussion of the brain; a football captain with smallpox; a football player acting as a life guard when a moth flew into his ear and, being dart shaped, could not back out. This probably would not have occurred had both the athlete and the moth stuck to their proper elements.

A complete detailed statistical report is not included, but a five year period from 1930 to 1934 may be selected arbitrarily from twelve years' experience in treating athletes at Northwestern University. During this five year period 687 cases were treated, of which 558 were injuries and 129 inflammations (table 1). The inflammations or infection cases include anything from furuncles and boils to a case of osteomyelitis of the femur. This last was a flare-up in an old quiescent osteomyelitis. A débridement was done, packing with petrolatum being employed according to Orr's method.[6] Good recovery ensued. It is noteworthy that the number of infections treated has fallen off from thirty-six in 1930 to ten in 1934. This may be attributed to the fact that the trainers have been taught to dress the minor conditions properly and to send the more severe cases in immediately for proper surgical care.

Of the types of injury (table 2), sprains lead with 167, followed by contusions and concussions 127, fractures 109, cartilage injuries 71, lacerations 56, disloca-

4. Hobart, M. H.: The Hobart Operation: A New Combination Operation for Recurrent Dislocations of the Shoulder, J. Bone & Joint Surg. **17**: 1001-1004 (Oct.) 1935.

5. Hobart, M. H.: Injuries of the Semilunar Cartilages of the Knee, Internat. J. Med. & Surg., February 1933.

6. Orr, H. W.: Osteomyeltis, Cyclopedia of Medicine, Philadelphia, F. A. Davis Company.

tions 24. One hundred and seventy-seven required operative or surgical procedure, including suture of lacerations and plaster casts, and forty-four major operations, which include herniotomies, appendectomies, knee cases, recurrent dislocation of the shoulder, osteomyelitis, and nerve and tendon surgery.

As to the anatomic location of the injuries, the knee leads by a remarkable majority of 110 (table 3). This is partly due to the exposed position and the inability to protect the knee, to the fact that both direct and indirect force can affect the knee and perhaps to the fact, as has been said, that the ankles are well protected and do not give way, resulting in the force being transmitted to the knee. It might be better not to strap the ankles so tightly. Next in frequency to the knee injuries come those to the digits, fingers and toes, sixty-six in all; then ankles fifty-three, shoulder and nose with forty-five each, hand thirty, wrist twenty-six, face twenty-five, elbow twenty-four, back and leg twenty-two each, and foot twenty-one. The other regions had less than twenty, dwindling down to one each of the coccyx and perineum.

TABLE 4.—*Number of Casualties*

Year	Football	Basketball	Baseball	Wrestling	Track	Tennis	Swimming	Miscellaneous	Yell	Water Polo	Boxing	Golf	Tumbling
1930	60	8	11	14	9	1	2	2	..	..	..	..	..
1931	61	9	9	12	7	..	3	3	..	..	..	..	..
1932	70	8	6	10	5	..	2	2	1	..	..	..	..
1933	80	10	5	18	7	..	3	1	..	6	3	..	..
1934	97	15	4	16	2	..	6	1	..	3	4	1	1
Totals	368	50	35	70	30	1	16	9	1	9	7	1	1
	(1)	(3)	(4)	(2)	(5)		(6)	(7)		(7)	(8)		

The last table of especial interest to coaches, perhaps, is that of the number of casualties in each sport (table 4). As is to be expected, football leads with 368. If it is realized that probably five or six times as many play football as any other sport, this will not sound so bad. Next to football comes wrestling with seventy, basketball fifty, baseball thirty-five, track thirty, swimming sixteen, water polo nine, boxing eight, tennis, golf and tumbling one each.

Further analysis might be made to determine which sport or anatomic locations sustained the most severe injuries.

SUMMARY

1. Athletic injuries demand special consideration by the medical profession as they are in a class by themselves.

2. It is necessary for an athlete to obtain a quick but none the less complete cure.

3. Certain advances have been made in the treatment of specific athletic injuries.

4. This review includes twelve years' surgical experience in handling athletic injuries at Northwestern University.

5. Detailed statistics cover a five year period (1930-1934) during this time.

6. In treating or coaching athletes it should always be borne in mind that all serious or permanent disabilities should be prevented and that the individual should come first and athletics is purely secondary.

636 Church Street.

Clinical Notes, Suggestions and New Instruments

A NEW SYRINGE FOR THE MULTIPLE SYRINGE METHOD (LINDEMAN)

JAMES SHERMAN HOUCK, M.D., ROCHESTER, N. Y.

Within the last few years many new appliances for blood transfusion have been devised to make the direct transfusion of whole blood safer, simpler and more convenient. It seems however that, in spite of these, more physicians and hospitals prefer and employ the Lindeman multiple syringe method. I feel that with properly trained assistants this method is the safest for both donor and recipient.

How shall the transfusion of whole unmodified blood be done when a patient has an infected blood stream? The possibility of contaminating the donor with the instruments ordinarily used has often been the stumbling block to the use of unmodified blood. Realizing that the multiple syringe method removed this hazard, provided each syringe was used but once during the procedure, I developed the syringe as shown in figure 1. It has greatly simplified this method of transfusion because it eliminates the two most important shortcomings of the Lindeman method:

1. Difficulties in holding the needle and syringe while withdrawing blood from the donor and injecting it into the recipient.

2. Accidental withdrawal of the needle from the vein.

The capacity of the syringe is 20 cc. The barrel has fastened to it a special thumb rest for comfortably holding the needle and the syringe, also an extra large, solid glass end with metal Luer tip.

The bearing surface of the plunger has been shortened to about 1½ inches. The other part of the plunger is ground fifteen-thousandths inch smaller. This construction hinders any blood that may coagulate on the exposed part of the plunger from interfering with the smooth working of the syringe. A description of the technic (patient with infected blood stream) now used entirely at the Genesee Hospital will best illustrate the advantages of the syringe.

The recipient's and donor's arms are prepared in the usual manner and their stretchers are arranged with a work stand between them mutually convenient to the operator and his assistant. Twelve or more 20 cc. syringes are placed on the work table, the number of syringes to be governed by the amount of blood to be given. The operator inserts as large a caliber Unger needle as the recipient's vein will accommodate, either 15 or 16 gage, for children 18 gage, 1 inch of the needle to be within the lumen of the vein, if possible. The index finger should be back of the needle shield, across the needle hub. One should press firmly down against the recipient's arm. The middle finger is in front of the needle shield, opposite the index finger, resting on the needle cannula, as shown in figure 2. Maintenance of this position throughout the transfusion will actually lock the transfusion needle in position and makes accidental withdrawal of the needle from the vein very difficult. This position further leaves the thumb free either to close the open needle hub when the syringe is removed or to lock the needle and syringe firmly together when administering the blood as illustrated in figures 2 and 3. The needle now being properly fixed in the recipient's vein, saline solution is slowly administered while the assistant places a large caliber Unger needle, 13 or 15 gage, in the donor's vein, using the same steps as described for the recipient. The blood is drawn into the syringe from the donor, and here it will be observed that the thumb rest acts as a counterforce to the pull of the syringe plunger. It is this pull that so frequently ruins the transfusion by with-

Fig. 1.—Improved syringe with special thumb rest.

drawing the needle from the vein. As each syringe is filled by the assistant, it is unlocked from the needle by lifting the thumb from the thumb rest and rotating the syringe gently to loosen it from the needle hub. As soon as the syringe is removed, the thumb quickly closes the open end of the needle hub and the filled syringe is laid on the table ready for injection

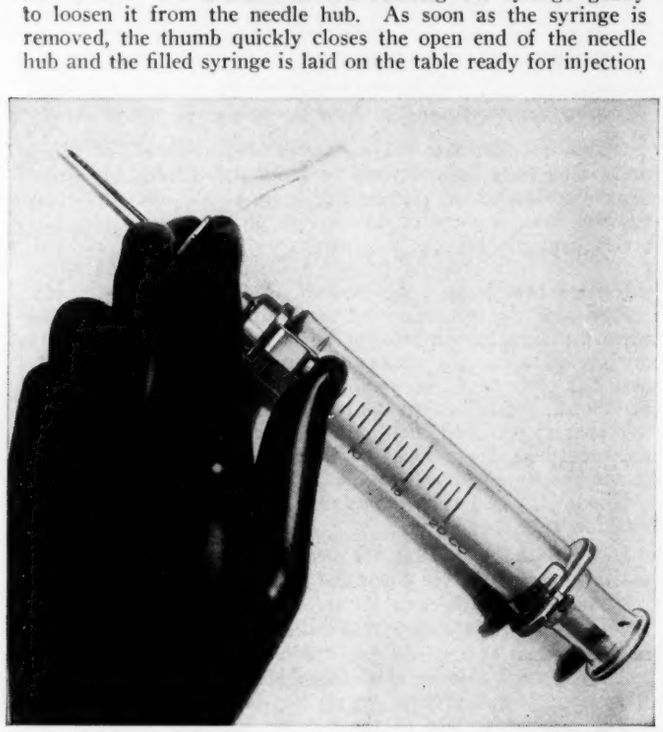


Fig. 2.—The syringe and needle comfortably held and locked together between the middle finger and the thumb. The thumb rest serves as a counterforce to the pull of the syringe plunger when blood is being withdrawn.

into the recipient by the operator. He administers the blood to the recipient and hands the syringe to the nurse, who immediately takes it apart and washes it. The syringe is not again used during the transfusion and so it is impossible to infect the donor.

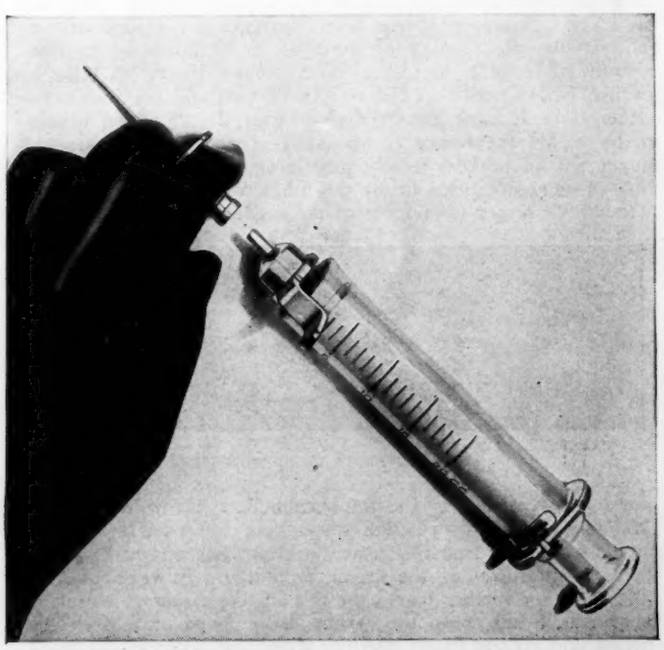


Fig. 3.—Syringe unlocked from needle; operator's thumb about to be placed over hub of needle.

We use this method whenever giving unmodified blood. If the recipient is not infected, we use the syringe again and again, ordinarily having six syringes on the work table. The operator administers the blood to the recipient and gives the used syringe to the nurse; she flushes each syringe thoroughly through three basins of physiologic solution of sodium chloride and places the syringe on the work table convenient to the assistant. We prefer this method as it is adaptable to use in the crowded rooms, where it would be impossible to have the stretchers placed head to head as is necessary with some of the instruments now being used, and further because it means no complicated apparatus. We ordinarily keep our syringes autoclaved in a canvas roll so that we have them ready for use at any time.

I feel that the new syringe construction has greatly simplified the multiple syringe method and hope that it will be the means of making this method still more popular.

311 Winton Road, North.

THE USE OF LIVING FASCIA TRANSPLANT TO REPAIR A HERNIA OF THE TIBIALIS ANTICUS MUSCLE

JOHN B. HARTZELL, M.D., DETROIT

It was over thirty years ago that McArthur [1] first brought out the use of fascia as a suture in the repair of hernia. After incising the external oblique aponeurosis he cut a small strip off the free border of the medial and lateral flaps. He left these attached at their inferior ends. After ligating the sac he used the strip from the medial border to suture the internal oblique muscle to Poupart's ligament under the cord. He then used the strip from the lateral border to suture together over the cord the flaps of the aponeurosis of the external oblique. Three years later he reported ninety-three consecutive cases in which fascia had been used as a suture without recurrence of the hernia. One of his patients died a year after the operation had been performed and he secured the scar. Microscopic sections showed the graft passing through the scar as living fibrous tissue. Although this work was well received it was to be twenty years before the use of fascia as a suture material was to be brought into more general use.

This came about largely through the experiments of Gallie and LeMesurier.[2] Working on rabbits and dogs, they found that fascia readily united with fascia, that the strength of the union depended on the area of the surface in contact. They further found that the surfaces placed in contact must be deprived of their sheet of areolar tissue and fat; otherwise the strength of their union is slight. Such surfaces should be thoroughly scraped and scarified in order that when healing does occur the new connective tissue may have a deep grip among the fibers. Three years later these same authors reported 100 abdominal and inguinal hernias repaired by means of fascia lata living suture without a recurrence.

Since that time Koontz,[3] Rosenblatt and Cooksey,[4] Meyers,[5] Haas [6] and Hodgkins [7] have reported excellent results with living fascia lata as a suture material. Patterson [8] and Allen [9] working independently have used living grafts of fascia as a method of internal fixation in fractures and dislocations. Grace,[10] Fuld,[11] Masson [12] and Bate [13] have each devised strippers that simplify the removal of strips of fascia lata.

1. McArthur, L. L.: Autoplastic Suture in Hernia, and Other Diastases: Preliminary Report, J. A. M. A. **37:** 1162 (Nov. 2) 1901; Autoplastic Sutures in Hernia and Other Diastases, ibid. **43:** 1039-1048 (Oct. 8) 1904.
2. Gallie, W. E., and LeMesurier, A. B.: The Use of Living Suture in Operative Surgery, Canad. M. A. J. **11:** 504-513 (July) 1921; The Use of Free Transplants of Fascia as Living Sutures in the Treatment of Hernia, Tr. Am. S. A. **41:** 331-353, 1923.
3. Koontz, A. R.: Experimental Results in the Use of Dead Fascia Grafts for Hernia Repair, Ann. Surg. **83:** 523 (April) 1926.
4. Rosenblatt, M. S., and Cooksey, W. B.: Muscle-Fascia Suture in Hernia, Ann. Surg. **86:** 71-77 (July) 1927.
5. Rosenblatt, M. S., and Meyers, Maurice: Muscle Fascia Suture with Preserved Fascia and Tendon, Surg., Gynec. & Obst. **47:** 836-841 (Dec.) 1928.
6. Haas, S. L.: The Union of Grafts of Live and Preserved Fascia with Muscle, Arch. Surg. **23:** 571-580 (Oct.) 1931.
7. Hodgkins, E. M.: A New Method of Surgical Herniorrhaphy, Surg., Gynec. & Obst. **47:** 831-835 (Dec.) 1928.
8. Patterson, R. H.: The Internal Fixation of Fractures and Dislocations by Use of the Human Fascial Suture, Ann. Surg. **88:** 879-884 (Nov.) 1928.
9. Allen, A. W.: Living Suture Grafts in the Repair of Fractures and Dislocations, Arch. Surg. **16:** 1007-1020 (May) 1928.
10. Grace, R. V.: A Subcutaneous Fascial Stripper, Ann. Surg. **90:** 1109-1110 (Dec.) 1929.
11. Fuld, J. E: Difficult Hernias, Am. J. Surg. **18:** 514-520 (Dec.) 1932.
12. Masson, J. C.: A New Instrument for Removing Fascia Lata for the Repair of Hernia, Proc. Staff Meet., Mayo Clin. **8:** 529-530 (Aug. 30) 1933.
13. Bate, J. T.: Instrument for Subcutaneous Removal of Fascia Lata Strips for Suture Purposes, Ann. Surg. **95:** 313-314 (Feb.) 1932.

The use of fascia lata as a transplant in the repair of hernia is now a well established surgical procedure. The fact that the use of it is attended by nearly universal success would indicate that this tissue possesses a remarkable vitality. It has been shown that both living and preserved fascia, when used as suture material in suturing fascia to fascia or fascia to muscle, will remain in the tissues and eventually become a part of a dense fibrous union.

REPORT OF CASE

A man, aged 42, while climbing out of a stream four years before fell shin first on top of a sharp stump, receiving a painful bruise. He had paid little attention to his injury after the bruise disappeared. Slowly a large lump developed at the site of the old injury and during the last ten months this lump had become painful, precluding his favorite forms of exercise. The last two months it ached constantly and was made much worse by even a short walk.

Examination revealed a lump about 2 cm. in diameter and 1 cm. in height. It was situated on the anterior surface of the right leg just proximal to the junction of the middle and lower thirds of the right tibia, over the lower portion of the belly of the tibialis anticus muscle. This lump would appear and disappear with dorsal and plantar flexion of the foot. With each appearance the patient experienced a dull ache. It could not be reduced by pressure and was tender on palpation. The diagnosis was a muscle hernia of the belly of the tibialis anticus. It was thought that the rent in the fascia of the tibialis anticus might be repaired.

Under local anesthesia an incision was made over this swelling. There was a definite fault in the fascia covering the tibialis anticus muscle. This appeared as a definite ring with a diameter of about 2 cm. The muscle bulged through this opening. The fascia was so taut that it was impossible to approximate it. An incision was made lateral to this opening. An attempt was made to slide the fascia medially in order to obliterate this space. The fascia was so taut that this could not be done. Even under marked tension it could be moved barely half a centimeter. It was decided that the only means of obliterating this opening was by the use of a fascia transplant. A strip of fascia lata about 10 cm. long and 1 cm. wide was then removed from the left thigh. This incision was closed with interrupted chromic sutures. This piece of fascia was split into three strips each about one-third centimeter in diameter. These strips were then woven in basket pattern into the opening. The ends were carried well into the fascia bordering the opening and anchored firmly in place. The skin was closed with interrupted dermal sutures. The foot and leg were placed in a posterior plaster splint. The skin was under so much tension, owing to the increased thickness of the tissues resulting from this woven fascia graft, that the skin stitches cut through and were removed on the fifth day. The skin margins separated and the fascia graft was plainly visible. As in any open wound a small amount of purulent secretion accumulated on it daily. Moist boric acid dressings were applied. By the tenth day definite granulations appeared to be budding up between the strips of fascia. It is a well recognized fact that the wounds in this area are frequently very slow in healing owing to the poor blood supply. This case was no exception. The granulation tissue filled in slowly until it covered the fascial graft. The wound then gradually epithelized. At present it is over a year since the operation. There is a dense scar with no protrusion of the muscle.

COMMENT

Here is an example of a good result in a transplant of fascia lata into an area in which the blood supply is notoriously poor. The wound could not heal by first intention owing to the fact that a skin separation occurred because of tension. The wound then healed by granulation. The granulation tissue grew up between the grafts and then over them. Definite buds of granulation tissue became firmly attached to the fascial grafts until finally the grafts were completely covered. At no time did any of the fascial sutures show any disposition to slough.

We have been unable to find any reference to another case of hernia of the tibialis anticus muscle. We believe that this is the first time that such a hernia has been repaired by a living fascial graft and that the healing process has been observed grossly from day to day during the period of repair.

7815 Jefferson Avenue, East.

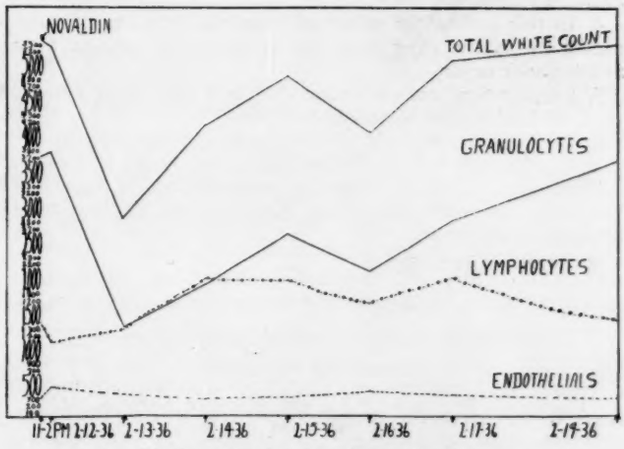
AGRANULOCYTIC LEUKOPENIA INDUCED BY A DRUG RELATED TO AMINOPYRINE

JULIEN E. BENJAMIN, M.D., AND JOSEPH B. BIEDERMAN, M.D.
CINCINNATI

In a previous communication we[1] reported a clinical study of a patient who developed agranulocytic leukopenia after ingestion of aminopyrine but who was able to take other related drugs with no deleterious effect. The patient has been well since the latter part of April 1934.

Recently there has been brought to our attention a drug chemically related to aminopyrine and supposedly less toxic, known as "Novaldin,"[2] which is sodium phenyldimethylpyrazolon methylaminomethane sulfonate. The following procedure was carried out in an effort to appraise the virtue of this drug:

The same martyr who volunteered herself for previous experimentation is a nurse, aged 50. She had had several attacks of agranulocytic leukopenia due, as we have proved, to the ingestion of aminopyrine. Since discontinuing its use, she has had no recurrence. Her white blood count Feb. 12, 1936, was 5,300. The differential count was polymorphonuclears 69 per cent, lymphocytes 25 per cent, transitionals 4 per cent, large mononuclears 1 per cent, eosinophils 1 per cent. Immediately after the blood count was taken she was given 10 grains (0.65 Gm.) of Novaldin. At 3 p. m., exactly three hours after ingestion, another blood count revealed white blood cells 5,200, polymorphonuclears 72 per cent, lymphocytes 20 per cent, large mononuclears 6 per cent, transitionals 2 per cent, as



Blood counts after ingestion of Novaldin.

shown in the chart. At 8 p. m. the patient felt chilly and tired. She went to bed with a slight headache. This pain increased to such an extent that at 3 a. m. it was severe enough to awaken her. At that time her feeling of fatigue was greatly increased. At 5:30 a. m. she felt hot, took her temperature, and found it to be 99.4 F. At that time her headache was severe and backache developed. The symptoms persisted for twenty-four hours after ingestion of Novaldin. Blood examination revealed the following: The white blood count was 2,800, polymorphonuclears 46 per cent, lymphocytes 43 per cent, large mononuclears 6 per cent, transitionals 5 per cent. Her physical examination at this time revealed nothing abnormal.

February 14, forty-eight hours after taking the drug, she felt much better, but a slight headache still persisted. The blood examination revealed a tendency to return to the normal. The total white count was 4,100, polymorphonuclears 46 per cent, lymphocytes 48 per cent, large mononuclears 2 per cent, transitionals 4 per cent.

Seventy-two hours after the initial dose of Novaldin she had recovered. The white blood count was 4,800, polymorphonuclears 54 per cent, lymphocytes 40 per cent, large mononuclears 4 per cent, eosinophils 2 per cent.

February 16, four days after she took the drug, she complained of a headache. Her white blood count was 4,000, polymorphonuclears 51 per cent, lymphocytes 40 per cent, large mononuclears 6 per cent, transitionals 3 per cent.

1. Benjamin, J. E., and Biederman, J. B.: Agranulocytic Leukopenia, J. A. M. A. **103**: 161-163 (July 21) 1934.
2. Winthrop Chemical Company.

February 17, five days after ingestion of Novaldin, she felt perfectly normal. Her white blood count was 5,000, polymorphonuclears 55 per cent, lymphocytes 39 per cent, large mononuclears 3 per cent, transitionals 2 per cent, eosinophils 1 per cent.

February 19, one week later, she felt fine. The white count was again 5,200, polymorphonuclears 69 per cent, lymphocytes 26 per cent, large mononuclears 2 per cent, transitionals 2 per cent, eosinophils 1 per cent.

ALLERGY TESTS

An intracutaneous skin test with Novaldin was negative. A patch test with the drug also was negative. A passive transfer test was then performed, 0.1 cc. of the patient's serum being injected into the skin of a normal person. This was followed forty-eight hours later by the injection into this site on the normal subject of a test solution of Novaldin. No reaction resulted, indicating the absence of reagins for Novaldin in the blood of the patient.

SUMMARY

1. A case of granulopenia resulted from the ingestion of Novaldin.

2. During a period of good health the patient was given 10 grains (0.65 Gm.) of Novaldin under control. This produced symptomatic signs of agranulopenia within eight hours and objective signs (blood examination) within twenty-four hours.

3. Intracutaneous, patch and passive transfer tests gave negative reactions.

4. In this patient the effect of Novaldin was one of hypersensitivity to the drug with the hematopoietic system acting as the shock organ.

5. Seventy-two hours after the drug had been taken, a normal state of health was restored.

CONCLUSION

"Novaldin," a drug related to aminopyrine, is capable of exercising the same deleterious effects as aminopyrine on the hematopoietic system.

19 West Eighth Street.

INFANTILE ECZEMA FROM COD LIVER OIL

REPORT OF TWO CASES

SAMUEL J. HOFFMAN, M.D., AND HERBERT RATTNER, M.D.,
CHICAGO

Cod liver oil is not usually considered a possible cause of eczema in infants. For that reason two such cases are herewith reported.

The first baby, a boy aged 22 months, had eczema rather generalized, the patches being more acute in the cubital and popliteal spaces and on the face and neck. The eczema first appeared on the day the baby came home from the hospital, after birth, and had persisted with remissions and exacerbations since then. The child's birth was normal, and the period in the nursery was uneventful. On his first day at home he was given cod liver oil with viosterol in addition to the breast feeding. The eczema then appeared and became gradually more severe. The diet was changed from time to time and the usual topical remedies were employed, but it was never considered that the cod liver oil might be the source of the eczema. In general the child was in good health, of normal weight and with a general healthy appearance despite the fact that he presented a "feeding problem" and vomited regularly. At nine months of age, when he was given solid foods, fish was one day included in the diet and produced in the child severe urticaria and vomiting. The attack was transitory, the fact that he was getting cod liver oil escaped attention, and the eczema persisted in a chronic state. He was never entirely free from it. One day recently the child walked into the kitchen where fish was being fried. He immediately developed severe giant hives, conjunctivitis and exacerbation of the eczema, apparently from inhalation, for the child had not been fed any of the fish. Then, and not until then, did we awake to the fact that cod liver oil might be the source of the child's eczema. It was omitted and within forty-eight hours the skin showed a very decided improvement, gradually to clean up entirely. The vomiting has stopped, he is no longer a finicky eater, he has gained in weight and the general state is excellent. Viosterol in oil was substituted and he seems to tolerate it well. On one occasion later, when he was accidentally exposed to fish odors, there was an immediate recurrence of urticaria and conjunctivitis.

The second baby, a girl aged 18 months, presented an acute eczema of the face, scalp and trunk and the cubital and popliteal spaces, of four months' duration. It was learned that at about that time cod liver oil had been fed to the child for the first time. It was discontinued, with skepticism on the part of the parents, and the eczema disappeared completely, to recur after a trial feeding with cod liver oil. This child, too, had a recurrence from inhalation when fish was being cooked in the home.

In both cases the fathers of the children were sufferers from seasonal hay fever.

It has long been recognized that there are individuals who are sensitive to fish, and there have been numerous cases in which untoward reactions have occurred, usually in the skin as urticaria, in the gastro-intestinal tract, and in the respiratory tract. Unusual cases are frequently encountered. Rowe[1] cites instances from the literature in which alarming reactions followed the licking of a postage stamp, and in one patient after wearing shoes in which inner soles were glued, the glue in each case being made from fish. Glue is used frequently on toys, especially on dolls with hair. It may be that cases are not infrequently missed because these unusual sources are not thought of or because, as was the case with one mother, she just hadn't thought of cod liver oil as fish.

University of Illinois College of Medicine

Special Clinical Article

PRESENT STATUS OF TRANSURETHRAL RESECTION OF PROSTATE

CLINICAL LECTURE AT KANSAS CITY SESSION

H. C. BUMPUS JR., M.D.
PASADENA, CALIF.

The relief of urinary obstruction resulting from prostatic enlargement by transurethral resection has freed the mind of the aging man of one of his chief worries, seeming to assure many of the possibility of a happier senescence than could have been expected formerly. In fact, during the past few years, wherever a group of elderly men has gathered, it has not been unusual to hear expounded the advantages of the new so-called electric operation over the former cutting operation for the relief of prostatic obstruction. While the minds of the laity have become filled with a feeling of confidence, those of the profession have become more and more confused by the diversity of reports concerning the results of transurethral resection appearing in medical literature. For many years the general practitioner has listened to his urologic brethren extol the merits of the suprapubic or perineal operation; always interested in their discussions, he has invariably based his opinion regarding the relative merits of the two operations on the clinical results that have come under his observation. In the past few years he has found his medical literature and scientific programs again filled with conflicting reports concerning the efficacy of still another form of treatment for the relief of prostatic obstruction. He reads that at the Mayo Clinic in 1935, 695 patients with prostatic obstruction were treated by transurethral resection with but seven

1. Rowe, A. H.: Food Allergy, Philadelphia, Lea & Febiger, p. 373.

Read in the General Scientific Meetings at the Eighty-Seventh Annual Session of the American Medical Association, Kansas City, Mo., May 11, 1936.

deaths, a mortality rate of approximately 1 per cent. In less than a week 58 per cent of those patients had left the hospital, while at the end of two weeks 28.7 per cent more had been discharged, making a total of 86.7 per cent who had two weeks or less of hospital expense associated with their operation. He contrasts these results with those occurring at the same institution following suprapubic prostatectomy. After the latter operation the mortality rate in any single year was seldom below 6 per cent and not infrequently rose to over twice that figure, while the majority of patients were compelled to remain over a month in the hospital. The superior results following resection he might attribute to the advantages of cooperative endeavor in an institution such as the Mayo Clinic had he not learned that T. M. Davis,[1] who first popularized the method, had performed resection on 966 patients with a loss of but seven. Dr. Davis also reports an average postoperative hospitalization of but eleven days for his patients.

Such results naturally arouse not only admiration but a sincere effort at imitation. It is this effort to emulate the success of the pioneers that I believe is responsible in a large measure for the confusion that now exists in the minds of the profession regarding the relative merits of the procedure, for all too frequently surgeons with insufficient experience undertake the procedure, not appreciating what potential danger lurks in the few centimeters comprising the prostatic urethra. It has a rich blood supply, so that any trauma not only is likely to be followed by brisk bleeding but will afford a direct entrance into the blood stream for whatever organisms may be present in the prostatic ducts and gland acini. Those who have never witnessed a so-called urethral chill with its profound prostration, elevated temperature and general collapse little appreciate how serious can be the consequences of any surgical procedure in this location.

Owing to the extreme technical skill required in its performance, the opportunity to learn the technic of transurethral resection in any series of cases sufficiently large to insure an adequate degree of skill is exceedingly limited. Because the entire operation is performed through a channel as limited as the urethra, the instruction of others in the intricate steps of the procedure is difficult. In fact, it is a procedure the technic of which can be satisfactorily mastered only by actual performance, since reading and personal instruction give but little help.

The few institutions where opportunity for developing such technic is available are large county hospitals, so it is not surprising that the inquisitive physician finds that in one of the country's largest hospitals, namely, the Los Angeles County General, following 154 transurethral resections there were nineteen deaths, a mortality of 11.2 per cent, and in an equal number of cases a second resection was required. In fifteen of these cases the bleeding following resection was so excessive as to demand operative intervention. If results of this kind are to be expected in large, well organized urologic services, how much more deplorable must they be in small hospitals where only occasional cases are available for treatment and where the general practitioner in observing the functional results of prostatic resection is likely to see not the result of a trained operator's skill but the unforseen complications of a novice's work and so look on the operation unfavorably. In other words, he will condemn the operation when in truth he should censure the operator; consequently, in any community where the profession is acquiring this experience, the procedure is more likely to be regarded unfavorably than favorably. This is exemplified by a questionnaire recently completed by Orr. He found that five urologists, all of whom had operated in more than 500 cases, reported a mortality rate of 1.9 per cent for the 4,767 cases in which they had operated, while twenty-five others who had done between 100 and 200 reported a mortality rate of 4.1 per cent for their 3,530 cases. Alcock,[2] who had performed over 1,500 resections, lost fifteen of his first 100 patients, while in his last 500 the mortality rate was 1.4 per cent, although the average age of these 500 patients was over 70 years. My own experience is similar. Eight deaths occurred during my first 250 cases, followed by over 300 cases before the next mortality occurred. Davis reports having lost but two patients in his last 500 cases. It is evident that in the hands of the experienced the mortality rate should be less than 2 per cent. In fact, it must be considerably lower than that associated with other forms of treatment if it is to replace them.

1. Davis, T. M.: Personal communication to the author.

PREOPERATIVE PREPARATION

Its lower mortality by no means constitutes the only advantage of the procedure. Formerly the emphasis in these cases of prostatism was placed so strongly on the preoperative preparation that many urologists considered it far more important than the operation itself; and the preparation of patients for prostatectomy frequently required an extended period of time in order to render them in sufficiently good physical condition to undergo the ordeal. Much of this preparation consisted in the removal of the residual urine either by intermittent catheterization or by continuous catheter drainage. Prostatic resection being a much less drastic procedure, patients in much poorer physical condition can successfully undertake it, for once the obstructing portion of the prostate is completely removed, the menace of residual urine is abolished; consequently, in the comparatively short time consumed in the operation there is accomplished what formerly required the use of a catheter for many days and sometimes many weeks.

Now the emphasis is entirely shifted. Thompson[3] at the Mayo Clinic reports that 65.7 per cent of the 695 patients who had resection there during 1935 received no preliminary treatment whatever. This in itself is a tremendous saving to the patient when one recalls the weeks of hospital care not infrequently deemed necessary prior to prostatectomy.

It is not to be wondered at, therefore, that laymen are expressing a decided preference for this newer procedure with its lessened expense as a result of shorter hospitalization, to say nothing of its negligible mortality rate. That the profession is not equally enthusiastic demands explanation, for in many communities the procedure was at first accepted without question as a decided advance, while now it is referred to with the utmost skepticism. In examining figures such as those compiled by Dr. Negley,[4] the reason for this becomes apparent. From Jan. 1, 1934, to Jan. 1, 1935, 251 patients were operated on in five different hospitals in the Los Angeles district with a mortality

2. Alcock, N. G.: Prostatic Hypertrophy, J. A. M. A. **104**: 734-738 (March 2) 1935.
3. Thompson, G. J.: Personal communication to the author.
4. Negley, J. C.: Personal communication to the author.

rate of 8.7 per cent and an average hospital stay of thirty-four days. Obviously the results in the resection cases were not a great enough improvement to call forth much enthusiasm for the method. Indeed, such statistics, when compared with those of more experienced operators referred to earlier in the paper, demonstrate that the surgeon lacking such training will do better to perform a prostatectomy.

POSTOPERATIVE TREATMENT

While formerly the preoperative preparation of patients contemplating prostatectomy was generally accepted as the most important and usually the most tedious portion of their treatment in the case of resection, it is now the postoperative management; and the most meticulous observation of the minutest detail becomes imperative.

After most operative procedures the surgeon leaves the hospital with the knowledge that the house staff and the nurses will adequately take care of the usual complications occurring during convalescence and that the satisfactory progress of his case depends largely on the patient's general resistance. Such is not the case with the patient who has just undergone resection. His general condition may be of the best, but let the drainage tube become occluded for only a short period of time and the complications that may occur are legion. And it is easy for the drainage tube to become occluded: it may become kinked; a small clot may obstruct it; the catheter may have been badly adjusted following operation; the patient may roll over on the tubing for a short time; a nurse may forget to fill the irrigating reservoir and as a result air bubbles obstruct the system; or, having clamped off the tubing while she empties the receptacle, she may forget to unclamp it after returning the urinal. Such obstruction may result in so great an overdistention of the bladder that the operative field is stretched and torn and serious bleeding develops, but more often it initiates a febrile attack. To prevent such reactions, not only must the outflow of urine be continuous and unobstructed but the greatest care is necessary to see that no organisms foreign to the host are introduced into the urinary tract. This cannot be accomplished if the nursing force permits the drainage tubes to lie on linen soiled by anal contamination or tucks them between mattress and sheet while emptying the receptacles. Strange as it may seem, the amount of indifference to aseptic technic following operation usually exceeds the amount of care given to the punctilious performance of its smallest detail in the operating room. To insert a sterile catheter in the bladder and then order that it be irrigated by the floor nursing staff every ten minutes for the first two or three hours after operation is to believe that the boundaries of aceptic technic are as far flung as those of the stratosphere; while to permit the catheter to drain into an occasionally sterilized urinary receptacle is to insure the early contamination of the operative field and the unnecessary prolongation of convalescence.

Bacteria pass up tubing into the bladder from any point of contamination, so that if an aseptic technic is to be followed after the operation it is best to attach the catheter to a closed system and, if possible, never open it except with the most rigid aseptic precautions. This can be done by attaching a reservoir to the tubing that leads from catheter to urinary receptacle. If need be, the bladder can be irrigated by allowing the fluid (which may be germicidal if desired) to flow in through a T tube. The receptacle that collects the urine should be sterile and instead of being emptied when filled should be replaced by a similar sterile receptacle. Otherwise it is impossible to keep the urinary tract free from secondary infection and the receptacle clean.

When enough resections are being done in a hospital to insure a nursing staff being specially trained and always available for their care, attention to these details is easily accomplished and the advantages of the newer method of treatment speak for themselves and need no press agent. But in hospitals where only an occasional case is handled and where surgery of the urinary tract represents but a small minority of the surgical work, this attention to detail seems impossible; and without it postoperative complications will be so frequent and annoying that this method of treatment comes rapidly into disfavor, not alone among those who attempt its performance but among the other members of the staff who are eager to evaluate any new procedure. If to this is added the lack of technical skill of any one who has not done at least a hundred of these operations, the unpopularity of the procedure in certain localities is not hard to understand.

COMPLICATIONS

Discouraging as these occurrences can be, bleeding is undoubtedly the complication that has most frequently brought ill repute to the procedure. In fact, for over a hundred years this complication has kept the method from general adoption, for the attempts to remove the obstructing prostatic tissue transurethrally are not new; only their successful accomplishment is recent. In 1840 Mercier was removing tissue through an instrument not unlike many in use today, but he had no way of controlling bleeding; and when Dr. Young presented his punch instrument before the International Urological Congress in 1909 he advised that its use be confined to minor obstruction, for there was no way to control hemorrhage resulting from more extensive removal of tissue.

With the application of the various types of electric currents to medical use the control of bleeding becomes possible, so that today it occurs as a complication in the hands of the experienced in probably less than 5 per cent of the cases, and in these seldom in a serious form. If a patient bleeds after suprapubic prostatectomy there is always a suprapubic opening through which the clots may be exuded and pressure relieved; not so in the resection case. If the catheter or urethra becomes obstructed by even a small clot, when the bladder fills it will contract in an attempt to expel it, ineffectual spasms of the bladder musculature will develop, and the bleeding, which was insignificant to start with, becomes aggravated. More clots form, which the bladder tries vainly to expel, and so a vicious circle is established. There is nothing to be gained by watchful waiting in the hope that the bleeding will stop. Although many novices in the care of these patients have this hope or else attempt to remove the clots by dilution, forcing more fluid into an already distended viscus (a practice that can result in vesical rupture, and is to be condemned), bleeding will continue until the bladder has been cleared of clots. To the experienced, the evacuation of clots from a distended bladder is not a serious or difficult procedure. It is seldom that the vessel which is bleeding is of sufficient size to result in a loss of blood dangerous to the patient's life; far more fre-

quently obstruction caused by the resulting clots, rather than hemorrhage, is the difficulty to be met. Clots in the bladder can be evacuated with proper instruments in a very few minutes, and the bleeding vessel, if still active, can be readily stopped by coagulation. Usually on evacuation of the clots the bleeding stops spontaneously. To the inexperienced, bleeding is a formidable and serious matter and is likely to occur rather frequently, necessitating transfusions and even cystotomy. The stopping of such bleeding by transurethral methods requires the maximum of technical skill, and those who have not attained such skill will choose the method of opening the bladder suprapubically for the evacuation of clots. To have informed a patient of the benign nature of transurethral resection and, having undertaken it, to be compelled after an ineffectual attempt to control an attack of postoperative bleeding to do a suprapubic cystotomy is likely to cool the ardor of the most enthusiastic resectionist who lacks training. Like the poor carpenter, such an unfortunate is inclined to blame his tools and decide that he has chosen the wrong instrument for his work.

INSTRUMENTS

That three different instruments and technics are usually employed for the transurethral removal of tissue and the control of bleeding has certainly added to the general confusion regarding the efficacy of the procedure. Where many remedies are recommended, the inexperienced are inclined to believe that not one is satisfactory. Some workers, preferring to use the original principle of Dr. Young, excise the tissue with a tubular knife as it is caught in the fenestrum of the hollow tube. To control the bleeding they depend on the local application of the coagulating current to the surface after the tissue is excised. The advantage of this method, they maintain, is that the coagulation and hence the destruction of tissue is kept at a minimum, insuring the more rapid healing that occurs in the case of an incised area as compared to a charred or coagulated one. Thus a more rapid and painless convalescence may be expected. The instrument seems to have the added advantage that it does not easily injure the external sphincter and is less likely to remove tissue beyond the borders of the gland, so that the possibilities of incontinence and extravasation of urine are lessened. In the hands of the inexperienced it seems the least dangerous of the three types of resectoscopes now in general use. However, its employment necessitates a familiarity with the direct cystoscope, an instrument with the use of which the majority of urologists are not familiar, most of them having confined their experience to the employment of lens instruments, a regrettable technical limitation but one that has prevented the general adoption of this method of transurethral resection.

Most urologists prefer to use a lens instrument with a reciprocating wire loop originated by Stern and perfected by McCarthy. This loop is activated by a high frequency current which excises the tissue and through which a coagulating current passes for the control of bleeding. Because the operation is observed through a lens system it is imperative that the field of vision be at all times as clear as possible, to insure which the coagulation of bleeding vessels must be carefully carried out. Add to the coagulation necessary to excise the tissue that which is necessary to insure adequate vision, and the aggregate result is a rather extensive charred area the healing of which is bound to be prolonged. The loop electrode is also dangerous in that, being pulled toward the operator, it can very easily, in the hands of the inexperienced, injure the external sphincter and result in a urinary incontinence (a complication that should be charged against the operator and not against the operation). The same statement of course applies to the postoperative strictures that have been reported following resection. They are the natural result of unnecessary trauma to the urethra brought on by the passage of too large an instrument or a too prolonged operation at the hands of the inexperienced. Their occurrence cannot justly be attributed to the operative procedure.

The third most popular method of resection is that developed by John Caulk, who uses a combination of the two previous ones, excising the tissue with a tubular shaft the end of which has been transformed into an actual cautery. He believes that such cauterization is less penetrating than that produced by the high frequency current, and that tissue destruction is therefore less, and healing more rapid.

APPLICABILITY OF TRANSURETHRAL RESECTION

Because of the untoward results of too extensive cauterization, many urologists have advocated the limitation of the procedure to the smaller type of median lobe hypertrophy and contracted bladder necks. Until prostatic resection became popular, few had interested themselves in the amount of tissue that was usually removed at prostatectomy. It was known that the average normal gland weighed about 23 Gm. and that hypertrophied ones had been removed weighing over 200 Gm., but what the average amount of tissue excised at an operation was had not been determined. I weighed the tissue removed in 575 consecutive suprapubic prostatectomies done at the Mayo Clinic and found only 32.1 per cent to weigh more than 50 Gm., while Alcock found the average weight of 433 he had removed to be 38.3 Gm. He tritely remarks, "If with the resectoscope one removes from 15 to 35 grams, one is removing a very large part of the average gland." As the removal of such an amount of tissue is readily accomplished in less than an hour's time, the new procedure seems well suited for the majority of men suffering from prostatism. The huge glands that are suitable for museum collections will of course require other procedures for their removal, unless the patient is willing to have or prefers multiple resections in place of prostatectomy.

The incidence of multiple resections is frequently inquired into by those interested in the method and not infrequently caustically referred to by its critics. Although it is usually possible to complete a resection at one time, it is not always desirable, as postoperative reactions seem to bear a direct relationship to the time consumed in the operation. There are several reasons for this. The urethra always resents undue trauma, and the importance of gentleness in the passage of instruments through it remains unchanged. In transurethral work these instruments are of larger caliber and remain in the urethra for long periods of time, so

that injury to the mucosa by the continual pressure can readily occur. Because the instruments are of large caliber, care should be exercised to see that the urethra is adequately dilated by the passage of sounds before their insertion. Too often at the present time one may see the enthusiastic resectionist forcing an instrument several sizes too large for the caliber of the urethra. Such manipulation is likely to result in periurethral abscesses, fistulas or strictures. To relieve the patient of a urinary obstruction due to prostatic hypertrophy and as a result leave him with obstruction due to urethral stricture is inexcusable but can be avoided only by careful procedure. A multiple stage resection is far preferable to such an outcome, and when its necessity is explained to patients few offer objection, realizing that to repeat a procedure as little debilitating as a resection is preferable to spending the time in the hospital required by prostatectomy.

There is no question that the operation of resection is difficult and when undertaken in the case of large hypertrophies is tedious in the extreme to the operator, while a prostatectomy is an easy operation for the operator but carries a much greater risk for the patient. Surgeons are human, and, other things being equal, some are inclined not only to select the easiest procedure but sure to resent the popularity of any method the adoption of which is difficult or impossible for them to master individually. Such members of the profession are heard to say "Yes, it is an excellent procedure when properly applied. Its field, however, should be limited to the lesser types of obstruction and to the poor types of risk, such as patients of advanced age with marked physical impairment brought on by their failing cardiovascular renal systems." If a procedure is safer for the greatly debilitated, it must of necessity be safer for the normal, and it is difficult to understand how a procedure that is admittedly more dangerous can be recommended simply because it is easier for the operator. Twinem recently reported the total operative mortality since 1920 for the thirty-three patients over 80 treated by prostatectomy either suprapubically or perineally at James Buchanan Brady Foundation of the New York Hospital as 33⅓ per cent, while Alcock reports doing resections on 124 patients over 80 with an 11.3 per cent mortality, and Thompson at the Mayo Clinic performed resections on thirty-eight patients over 80 during 1935 without a death.

Every urologist who performs a large series of resection operations is sure to fall heir to a number of patients whose advanced age has made other members of the profession hesitate to operate by the older methods. In fact, the first cases that the pioneers in the procedure handled were those that they or their associates feared to risk submitting to a prostatectomy.

RECURRENCES

Will this newer operative procedure be as permanent as the older methods? is a question frequently confronting its advocates. More time must elapse before this can be answered with authority. It is going to be difficult to distinguish, in an acute survey, those cases that constitute a true recurrence from those in which a return of the obstructive symptoms occurs because of the initial incompleteness of the first resection. At the present time the number of patients returning for a subsequent resection after a prolonged period of relief appears to be less than the number who succumbed following the older methods of removal. Those that are so unfortunate as to require such a subsequent resection have, in my experience, felt that a repetition of the procedure was preferable to the risk involved in the more drastic enucleation.

Hugh Cabot [5] has recently written:

"The real nub of the question turns upon the decision as to who is to treat by operation these people with obstructing prostates. If they are to be treated in the future as in the past, largely by the general and perhaps occasional surgeon, then the indications are for an operative method as nearly fool proof as may be. But this does not seem a high ideal for surgical practice. If it is the standard that we are to accept, then we must take it with the mortality, which in this country at least has rarely been below 15 per cent or even 20 per cent. That any elderly man is likely to shy at such a risk will be evident. If these men are to be treated by experts, then transurethral resection can already claim over 5,000 such cases carefully observed in which the mortality rate has been below 2 per cent and the hospital confinement has been less than a week, with functional results the equal if not superior to those obtained by the older methods."

What the profession chooses for itself is usually an excellent indication of what the public will ultimately demand. Ten per cent of my last hundred patients who had prostatic resection have been physicians.

112 North Madison Avenue.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORTS. HOWARD A. CARTER, Secretary.

HEALTH RAY SUN LAMP NOT ACCEPTABLE

Manufacturer: Health Ray Manufacturing Company, Inc., New York.

The Health Ray Sun Lamp consists of an arc between carbon electrodes operated in a metal housing 8½ by 8½ by 4½ inches in outside dimensions.

The front side of this metal box is covered with a small mesh wire screen, through which the arc radiation emanates. The rear side of the box consists of a hinged door, on the inside of which is mounted a porcelain insulating base that supports the carbon arc electrodes and the ballast resistance. The housing is mounted on a yoke that permits adjustment in the vertical plane.

The carbon electrodes are held in a vertical position, side by side, but separated about one-half inch. The arc is formed by bringing the upper ends of the electrodes in contact, by rotating the support of one of the carbon electrodes, which support terminates in a hard-rubber knob, on the outside of the door. After the arc has been operated for several minutes this knob becomes uncomfortably hot, and hence it is difficult to adjust the arc.

The housing, being single walled and so small, becomes burning hot to the touch after the arc has been operated for from five to ten minutes. While the housing did not become sufficiently hot to burn bits of paper placed on it and hence is probably not a fire hazard, nevertheless it cannot be commended for treating children unless guarded by an attendant.

Instead of supplying the purchaser with safety glasses (goggles) to shut out the ultraviolet and yet enable the user to move about in safety, opaque eye covers are provided. These covers of sponge rubber, 8 mm. in thickness, are cut to fit the

5. Cabot, Hugh: Modern Urology, ed. 3, Philadelphia, Lea & Febiger, vol. 1, section 14, chapter 18.

eye socket, viz., 4.5 cm. long and 2.5 cm. in its widest dimension. This is to be tied over the eyes by means of rubber elastic string. This form of economy (sacrificing safety to cheapen a commodity) is not to be recommended.

ADVERTISING MATTER

In lay advertising, exaggerated or misleading statements have appeared; for example, "Build up your resistance and vitality so that your system will easily throw off germs and poisons," "The Cheapest Form of Health Insurance," and "Improves your appearance 100%." The promoters of the carbon arc Health Ray Sun Lamp place great emphasis on producing a tan. The carbon electrodes supplied with the Health Ray Sun Lamp are "Sun Tan," "Super Tan" carbons that are strong in ultraviolet radiation of wavelength shorter than 2,900 angstroms, not found in sunlight.

RADIOMETRIC TESTS

Following the recommended procedure, by means of a balanced thermopile and filter radiometer, measurements of the ultraviolet radiant flux, of wavelengths shorter than and including 3,132 angstroms, were made at a distance of 24 inches in front of the lamp, which, as already mentioned, is covered with a wire mesh screen.

The arc of super tan (sun tan) carbons was operated on 115 volts alternating current, and it burned the quietest on 8.0 to 8.5 amperes, the total power input being from 850 to 900 watts.

At a distance of 24 inches the ultraviolet flux (intensity) of wavelengths shorter than and including 3,132 angstroms, with only the wire mesh in place, was 48 microwatts per square centimeter ($\mu W/cm.^2$), whereas for acceptance as a therapeutic lamp (using C carbons) the minimum is about 55 $\mu W/cm.^2$

However, to be acceptable as a sunlamp for home use, without the supervision of a physician, the Council specifies that the source shall not emit an appreciable amount of ultraviolet radiation of wavelengths shorter than 2,800 angstroms. In the carbon arc lamps this is accomplished by using a window of Corex-D glass in front of the arc. On this basis the ultraviolet radiant flux of wavelengths 2,900 to 3,132 angstroms is reduced from 48 $\mu W/cm.^2$ to 9.2 $\mu W/cm.^2$ This is only about one tenth the intensity required for acceptance by the Council.

In view of the objectionable advertising matter and the weak intensity of the ultraviolet radiation of this generator, the Council voted not to include the Health Ray Sun Lamp in its list of accepted devices.

OTOFLEX NOT ACCEPTABLE

Manufacturer: The Otoflex Corporation, Milwaukee.

The Otoflex is a device for generating tones which are audible within the ordinary sound range. These tones are generated by an electric oscillator making use of vacuum tubes. The frequency of the tones may be changed at will and the volume increased or decreased. An electric motor provides a method whereby the tone may be automatically varied from very low to very high pitch. The tone produced is not unlike that of a siren on a fire truck, but greatly reduced in intensity. The sound is applied to the ear by means of telephone receivers. Additional head-sets may be obtained and each is provided with its own rheostat to govern the intensity. The unit operates on 110 volts alternating current and weighs about 25 pounds.

The device was tested in a clinic acceptable to the Council. In this investigation thirty-one persons were treated, twenty-one women and ten men. Their ages ranged from 21 to 68 years. All had been hard of hearing for a long time and their deafness was truly "chronic." Those who presented themselves were given careful clinical diagnostic examination including tests with an audiometer in a sound proof room. The audiometric tests were repeated approximately every two weeks during the course of treatments. All hearing tests were made by the same person to insure uniformity of method. The sponsors of the instrument suggested that it would be at least a month before the treatments would produce any measurable change.

The users were instructed to sit quietly and listen to the tones for thirty minutes each day. Each one was instructed not to make the sounds extremely loud but to keep them distinctly audible. (It is well known that loud noises may damage the hearing mechanism but it has not been demonstrated that faint or distinctly audible sounds have any deleterious effect on hearing.) At the end of the first month, those who desired to continue were invited to do so. Twenty of the thirty-one used the instrument for twenty-five treatments or more, seven had fifty or more, and five had seventy or more. One used the instrument ninety-four times between Jan. 17 and July 25, 1935. More than a thousand treatments were given.

The results of the investigation submitted were not convincing, since no significant changes in hearing were noted, either for the better or for the worse. In the opinion of the Council, the corresponding changes in hearing would have been noted if the patients had not used the instrument at all.

Unless the deafness treated should be of a different nature from that encountered by those who volunteered for study, the Council can see no reason to expect the use of the Otoflex to result in any improvement in hearing. In the opinion of the Council, more critical evidence than that received to date would have to be presented.

In view of the negative results of the investigation, the Council on Physical Therapy voted not to include the Otoflex in its list of accepted devices.

Council on Pharmacy and Chemistry

ANTIPNEUMOCOCCIC SERUM TYPES I AND II CONTAINING HETEROPHILE ANTIBODIES-LILLY NOT ACCEPTABLE FOR N. N. R.

IN THE REPORT OF THE ANNUAL MEETING OF THE COUNCIL ON PHARMACY AND CHEMISTRY FOR 1935, IT WAS NOTED THAT "A PHARMACEUTICAL HOUSE IS MARKETING AN ANTIPNEUMOCOCCUS SERUM WITH THE CLAIM THAT THE PRODUCT CONTAINS CERTAIN 'HETEROPHILE UNITS' AND 'NEUTRALIZING AGENTS' WITH THE CLAIM THAT THESE REPRESENT ADVANTAGES OVER ORDINARY PRODUCTS OF THIS CLASS. THE FIRM HAS NOT PRESENTED THE PRODUCT FOR INCLUSION IN NEW AND NONOFFICIAL REMEDIES. THE COUNCIL VOTED THAT THE FIRM IN QUESTION BE INVITED TO PRESENT THE AVAILABLE EVIDENCE IN ORDER THAT THE COUNCIL MAY CONSIDER IT AND REPORT TO THE PROFESSION ON THE STATUS OF SUCH A PRODUCT IN THE LIGHT OF THE EVIDENCE FOR THE CLAIMS MADE."

THIS ACTION WAS INSTITUTED AND THE FIRM, ELI LILLY AND COMPANY, SUBMITTED ITS EVIDENCE AND RATIONALE FOR PROMOTION OF THE PRODUCT. FOR THE PURPOSE OF DETERMINING THE PRESENT STATUS OF THIS PREPARATION, THE COUNCIL REQUESTED DR. NORMAN PLUMMER (INSTRUCTOR IN CLINICAL MEDICINE, CORNELL UNIVERSITY MEDICAL COLLEGE) TO MAKE A REPORT ON THE ADDITION OF THESE IMMUNE FACTORS TO ANTIPNEUMOCOCCIC SERUM.

THE COUNCIL HAS APPROVED AND ADOPTED THE FOLLOWING REPORT OF DR. NORMAN PLUMMER ON THE USE OF HETEROPHILE ANTIBODIES IN THE TREATMENT OF PNEUMONIA. THE COUNCIL HAS FURTHER DECLARED ANTIPNEUMOCOCCUS SERUM TYPES I AND II CONTAINING HETEROPHILE ANTIBODIES MARKETED BY ELI LILLY AND CO. UNACCEPTABLE FOR INCLUSION IN NEW AND NONOFFICIAL REMEDIES BECAUSE OF LACK OF EVIDENCE OF ITS THERAPEUTIC VALUE. THE COUNCIL DESIRES TO EMPHASIZE THE CONCLUSION OF DR. PLUMMER THAT, IN THE LIGHT OF PRESENT KNOWLEDGE, RECOMMENDATION OF THE COMBINED HETEROPHILE SERUM FOR GENERAL DISTRIBUTION IS UNWISE AND UNWARRANTED.

PAUL NICHOLAS LEECH, Secretary.

HETEROPHILE ANTIBODY IN THE TREATMENT OF PNEUMONIA

NORMAN PLUMMER, M.D.
NEW YORK

Forssman[1] in 1911 found that guinea-pig tissues, when injected into the rabbit, produce a hemolytic immune serum not only for guinea-pig red blood cells but also for sheep red blood cells. The lack of biologic relationship between the

From the New York Hospital and the Department of Medicine, Cornell University Medical College.

1. Forssman, J., and Widen: Die Herstellung hochwertiger spezifischer Schafhämolysine ohne Verwendung von Schafblut: Ein Beitrag zur Lehre von heterologer Antikorperbildung, Biochem. Ztschr. **37**: 97, 1911.

species producing the antigen and the species for which the antibody has an affinity suggested the term heterophile, in contradistinction to the term homologous for the usual type. One group of animals, the so-called guinea-pig type, contains heterophile antigen, and this antigen when injected into the body of another group of animals (so-called rabbit type) produces heterophile antibody. The human being does not have the heterophile antigen but does produce the antibody; the horse possesses the antigen and therefore cannot produce the antibody. The rabbit, again like the human being, produces heterophile antibody. Recently, Bailey and Shorb [2] showed that many different bacteria contain heterophile antigen. They have reported that all types of the pneumococcus in both rough and smooth forms contain heterophile antigen. This antigen, they find, is not type specific. It has been shown that an animal of the rabbit type, when immunized with pneumococci, develops a high titer of heterophile antibody, while an animal of the guinea-pig type, such as the horse, already shows the heterophile antigen and does not produce the antibody.

The proponents of heterophile serum reason "that ordinary antipneumococcus horse serum, because of its absence of heterophile antibody, is an incomplete immune serum." Furthermore, they state that the antipneumococcus horse serum, because of its content of natural heterophile antigen in addition to the heterophile antigen of the pneumococci added in the process of immunization, when injected into the human being sick with pneumonia exerts a certain "antagonistic action" by neutralizing any natural heterophile antibody present in the human being.

The existence of heterophile bodies, the presence of heterophile antigen in the horse and heterophile antibody in the rabbit, in other words the Forssman phenomenon as a biologic condition, is accepted by most observers. This subject of heterophile phenomena in immunology has been reviewed and commented on by Leon Buchbinder.[3] Buchbinder stresses the importance of this condition, he comments favorably on the use of heterophile antibody in passive immunization, and he predicts that the heterophile factor will have increasing importance in the production of immune serum.

The presence of heterophile antigen in the pneumococcus and other bacteria is based on the work of Bailey and Shorb [4] at Johns Hopkins University. Since 1931 they have made several reports. They found that they could produce antisheep hemolysin in the serum of rabbits, giving the characteristic reactions of heterophile antibody, by (1) injecting pneumococci subcutaneously and intravenously into the rabbits, (2) infecting rabbits with pneumococci, and (3) feeding killed cultures of pneumococci to rabbits. Further, they were able to remove the antipneumococcus hemolytic antibody from the serum by absorption either with homologous or heterologous boiled pneumococci or with boiled sheep corpuscles. The experiments of Bailey and Shorb were carried out further to show that: 1. Rabbits immunized with heterophile antigens from animal sources, particularly sheep corpuscles, were relatively resistant to intravenous infection with type I pneumococci. 2. The protective property of antipneumococcus horse serum for mice was enhanced, under certain conditions, by the use of antisheep hemolytic rabbit serum with it. 3. The opsonic power of whole and concentrated antipneumococcus horse serum for pneumococci can be greatly increased by combination with antisheep of antipneumococcus rabbit serum.

The observations of Bailey and Shorb are excellently reported. However, observations of such significance should be confirmed by an independent group of investigators before receiving final acceptance. The presence of heterophile antigen in the pneumococcus and other bacteria and the production of heterophile antibody in the rabbit seem reasonable. Knowing the variability of results following the intravenous injection of pneumococci into the rabbit, and knowing the shortcomings of the mouse protection test, it is difficult to follow completely the conclusions that the resistance of rabbits can be increased and the protective power for mice enhanced by the use of heterophile bodies. As far as the increase in opsonic power is concerned, Goodner,[5] who has been working along this line, feels that the cause of this increase is not yet known and that it may be a factor other than the heterophile antibody.

In order to show further evidence that heterophile antibody has biologic and therapeutic significance in pneumococcic infections, Powell, Jamieson, Bailey and Hyde [6] at the Lilly Research Laboratories and at Johns Hopkins University repeated the Goodner experiment, producing type I, II and III pneumococcus dermal infections in rabbits and curing them with (1) antipneumococcus immune horse serum, (2) rabbit heterophile (anti-boiled sheep cell) serum, (3) rabbit antipneumococcus serum, and (4) mixtures of horse and rabbit antipneumococcus serum. They conclude that the usual pneumococcus mouse protective antibody is more effective therapeutically in rabbits when fortified with heterophile antibody.

This work of the Lilly investigators is excellently reported and if it can be repeated will throw new light on the entire subject of pneumococcus immunity. Since Goodner [7] reported the pneumococcus dermal test in rabbits in 1928, it has been used quite extensively by various pneumonia investigators. Goodner, however, found the test applicable only to type I pneumococcus infections and his reports deal only with infections of this type. It has been found that only an occasional strain of type II or type III pneumococcus will produce the dermal infection. In my own experience certain virulent human strains of type II pneumococcus were pathogenic for rabbits only in extremely high dosage. This experience makes it difficult to follow the very consistent results procured by these experimenters. Their protocols do not indicate the difficulties reported by other investigators. Assuming that this work can be repeated, it still remains true that in this experiment the better results are reported when the infected rabbit is treated with rabbit serum and it still is a question whether it is better to go from the rabbit to the human being or from the horse to the human being.

The strongest argument in favor of heterophile serum given by its proponents is that convalescents from pneumococcic pneumonia show an increased titer of heterophile antibody in their serum. Bailey and Shorb [4] report as follows: "A number of human sera were obtained from cases of lobar pneumonia near the beginning of the disease and soon after the temperature had returned to normal. These sera were titrated for antisheep hemolysin. There was a definite increase in the hemolysin in the cases which recovered. For example, in one case infected with an organism reported as a type IV pneumococcus the titer of the serum on the fifth day of the disease was 16 units per cc., and at the end of the twelfth day (sixth afebrile) the serum contained 100 units of anti-sheep hemolysin per cc." This represents the evidence in the literature showing that heterophile antibody is increased in the serum of convalescent pneumonia patients. On the other hand, recently, Finland, Ruegsegger and Felton [8] have reported their finding of heterophile antibody (sheep cell hemolysin) in the serum of (1) convalescent pneumococcic pneumonia patients, (2) subjects immunized with potent pneumococcus antigenic fractions, and

2. Shorb, Mary S., and Bailey, G. H.: Heterophile Antigen in Various Bacterial Species, Am. J. Hyg. **19**: 148-183 (Jan.) 1934.

3. Buchbinder, Leon: Heterophile Phenomena in Immunology, Arch. Path. **19**: 841-880 (June) 1935.

4. Bailey, G. H., and Shorb, Mary S.: Heterophile Antigen in Pneumococci, Am. J. Hyg. **13**: 831-856 (May) 1931; Immunological Relationships of Pneumococci and Other Heterophile Antigens and Biological Significance in Pneumococcus Infections, ibid. **17**: 358-411 (March) 1933.

5. Goodner, Kenneth: Personal communication to the author.

6. Powell, H. M.; Jamieson, W. A.; Bailey, G. H., and Hyde, R. R.: A Comparative Study of Antipneumococcus Serum Containing Heterophile Antibody, Am. J. Hyg. **17**: 102-121 (Jan.) 1933.

7. Goodner, Kenneth: Further Experiments with the Intradermal Pneumococcus Infection in Rabbits, J. Exper. Med. **48**: 413-429 (Sept.) 1928.

8. Finland, Maxwell; Ruegsegger, J. M., and Felton, L. D.: Heterophile Antibodies in Pneumonia, J. Clin. Investigation **14**: 683 (Sept.) 1935; Should Heterophile Antibody Be Used in the Treatment of Pneumococcic Pneumonia? J. A. M. A. **105**: 1180-1182 (Oct. 12) 1935.

(3) normal controls. In all they tested 671 serums and included 120 pneumonia patients. The titer of heterophile antibody was surprisingly the same in the three groups of cases, failing to show any increase in titer in the convalescent pneumonias and no decrease in the bacteremic or fatal cases. In the pneumonia patients treated with antipneumococcus horse serum there was a decrease in hemolysin shortly after the injection of the serum and a definite rise a week or more later. These changes in no way were found to correspond to the course of the disease. Finland, Ruegsegger and Felton felt that there was no justification for the contention that antipneumococcus horse serum in acting as a heterophile antigen is primarily toxic and has an antagonistic action. They conclude that heterophile antibody has no bearing on the course or outcome of human cases of pneumococcic pneumonia.

The manufacturers of the combined heterophile antibody serum admit that the clinical and statistical evidence is limited; however, they give the following: "In a series of fifty cases treated, the mortality was 8 per cent, while in the control group it was 26 per cent. The average number of days of hospitalization was twelve for the treated and sixteen and one-half for the untreated. Jamieson and Powell reported on the use of the serum in five cases of pneumonia. In four cases there was temporary marked drop in temperature and relief of toxemia. One patient failed to respond. When the triple combined serum was used in a small series of cases within seventy-two hours of onset of the disease, the mortality was 28.5 per cent as against 58.5 per cent when no serum was used. No attempts were made to type the pneumococci."

Such a statistical report is not only limited in its scope but is extremely misleading. Chance plays its part in the run of pneumonia cases in the same way that it plays its part in the run of cards. I have seen as many as thirty consecutive deaths from pneumonia in the wards of Bellevue and a greater number of consecutive recoveries. The practitioner who sees a number of pneumonia patients in his practice may go for several seasons without a single fatality and then may have several deaths in a row. This shows the necessity of a large series and shows the importance of alternate controls. In attempting to ascertain statistical evidence in pneumonia it has been found necessary to control a group of cases by having the following information: (1) accurate type diagnosis, (2) blood culture determinations, (3) presence or absence of complications, (4) age of patient. The mortality rate varies with each of these factors, and in addition it varies with each particular year and with the season of the year.

The combined heterophile antipneumococcus serum has been marketed since September 1934. It is a mixture of the refined and concentrated serums of the horse and of the rabbit. The horse immunization is carried out by the intravenous injections of virulent culture of types I, II, III and IV, and subcutaneous injections of whole culture toxic vaccines of the same types. The rabbit immunization is produced by intravenous administration of virulent pneumococci, high in heterophile antigen, and of the same four types. The heterophile antigen in the horse serum is eliminated by adding the rabbit serum and removing the resulting precipitate. An additional amount of rabbit serum is then used so that the final product will contain a certain amount of heterophile antibody in addition to the usual Felton units of protective substance. The average horse fraction is estimated at from 80 to 90 per cent, and the rabbit fraction at from 10 to 20 per cent.

The producers of this combined heterophile serum do not state why the Cooper type IV pneumococcus is used instead of one of the more important subtypes of group IV. This will undoubtedly lead the average physician who is not familiar with the more recent classification of the pneumococci to believe that the immunization is complete for the usual types I, II and III and group IV pneumococcus, and, therefore, that the serum gives passive immunization for all pneumococcic pneumonias. Furthermore, it should be pointed out that several producers of antipneumococcus serum have found that it is more difficult to immunize horses for several types than for one or two types. I have noted that the Lederle bivalent type I and II serum requires almost double the amount of fluid that the monovalent type I serum of the same brand requires. Were it not for this uneven immunization when several different types are used, it would be highly desirable to prepare type I, II, VII and VIII serum. The producers of serum also have found it difficult to obtain horse serum in which type III and type IV antibodies have formed in any appreciable titer. The manufacturers of the combined heterophile serum do not mention any of these difficulties; neither do they indicate the titer of type III or type IV protective substance in the serum.

The fact that the heterophile serum contains the foreign proteins of both the horse and the rabbit theoretically doubles the chances for allergic reactions. I have known of several instances of atopic rabbit sensitivity. Acquired rabbit sensitivity is quite common among laboratory workers and probably occurs with some frequency in industries in which rabbit pelts are handled. There are no statistics, but one is led to believe that rabbit sensitivity is almost as common as horse sensitivity.

In their booklet the manufacturers state that patients receiving serum should be given a skin test using 0.1 cc. of a 1:10 dilution of the serum, and an ophthalmic test with the same diluted serum. Presumably, the serum referred to is the diluted therapeutic serum, which contains an indefinite amount of the horse and rabbit serum protein. This certainly would give unreliable readings. It would seem advisable, when the combined serum is used, to recommend two tests, one with the diluted whole horse serum and the other with the diluted whole rabbit serum. In this way antipneumococcus horse serum, which has so much evidence for its value, could then be given to the type I patient sensitive to rabbit serum but not sensitive to horse serum.

CONCLUSIONS

1. The presence of heterophile bodies in animal tissues, animal serums and bacteria is strongly suggestive that these bodies play a part in certain immune reactions.

2. The animal experiments carried out by Bailey, Shorb, Powell, Jamieson and Hyde do not prove that the heterophile bodies play a rôle in the pneumococcus immunity of the human being. Some of the results reported are open to question. The work should be repeated by an independent group of investigators before it is accepted.

3. The study by Finland, Ruegsegger and Felton on the heterophile antibodies in the serum of patients convalescing from pneumonia and in controls leads one to believe that the heterophile bodies do not have any particular bearing on the course of pneumococcic infections in man.

4. The clinical and statistical evidence cited by the manufacturers of the combined heterophile antibody serum is too limited and is strongly misleading.

5. The presence of both rabbit and horse proteins in the serum will increase the incidence and the dangers of allergic reactions. This is a definite disadvantage, because with newer methods of refining serum the allergic reaction is the principal source of danger in any type of serotherapy.

6. There is only slight experimental evidence and no clinical evidence that the combined heterophile serum gives any immunity against type III and group IV pneumococcic infections. There is the same lack of evidence that the combined serum produces a greater immunity for type I and type II infections than the ordinary antipneumococcus horse serum.

7. The principal theoretical advantage of the combined heterophile serum is that it could be used for all pneumococcic pneumonias, regardless of type, and the corollary of this that pneumococcus typing would not be necessary. Serum having this advantage would be highly desirable, but because its superiority is unproved and because of the probable increase in allergic reactions it is unfair and unwise to recommend the combined heterophile serum for general distribution.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 NORTH DEARBORN STREET . . . CHICAGO, ILL.

Cable Address - - - - "Medic, Chicago"

Subscription price - - - - - Seven dollars per annum in advance

Please send in promptly notice of change of address, giving both old and new; always state whether the change is temporary or permanent. Such notice should mention all journals received from this office. Important information regarding contributions will be found on second advertising page following reading matter.

SATURDAY, AUGUST 15, 1936

RHEUMATIC INFECTION IN CHILDHOOD

The abdominal syndrome is one of the most frequently overlooked symptoms of childhood rheumatic disease. Wolffe and Brim,[1] writing in the current issue of the *American Journal of Diseases of Children,* call attention especially to a group of children in whom recurrent abdominal cramps lasting from six months to several years were apparently the only subjective manifestation of an active phase of rheumatic infection. The cramps lasted as a rule from a few minutes to a few hours and tended to recur frequently. At times the child complains of nausea and sometimes vomiting. The episode is usually closed before the next meal. Pain is felt frequently around the umbilicus for a short time but sometimes becomes generalized. Tenderness and rigidity are usually absent. Characteristic histories are difficult to obtain, and it is often not until evidence of organic cardiac disease is accidentally discovered that such experiences are related to a physician and then only after persistent and pointed questioning. Early recognition of this abdominal syndrome as a manifestation of rheumatic infection before the onset of organic heart disease becomes manifest may thus become in some instances of considerable importance. Except for dietary indiscretion, active childhood rheumatism is probably the most important cause for such abdominal symptoms, provided the attacks of cramps are transitory and apparently inconsequential. Other manifestations of the active phase may be associated with it, such as pallor, weight fixation in spite of a properly balanced diet, irritability without apparent cause, twitchings and tics, and enuresis after the control of the bladder has been established. The gastro-intestinal manifestations of rheumatic disease may be acute or chronic. The acute symptoms last for a short period, usually from one hour to three days. The attack commonly begins in the upper part of the abdomen, with a sharp nonradiating pain. It often occurs at night or in the morning after a hasty breakfast. The temperature is slightly elevated but rarely higher than 101 F. The pulse rate is not markedly increased. Diarrhea is the exception. The chronic form is characterized by mildness. After the subsidence of the acute attack, minor episodes of fleeting abdominal pain may recur from time to time without any other signs. Diarrhea alternating with periods of constipation is, however, a frequent phenomenon of the chronic form.

In the same issue of the *American Journal of Diseases of Children* Ash [2] discusses the prognosis in childhood rheumatic infections. Her information was based on 416 patients who had been under observation for two or more years. The average period of observation for the series was seven and one-half years. Of the total group traced, ninety-three, or 22.3 per cent, died as a result of rheumatic infection. Four children died of other causes. Valvular heart disease was present in 66.1 per cent. In 257 patients (57.7 per cent) the disease began with fever of varying degree associated with migratory articular pains of variable intensity. The average age at which these children came under observation was 7.6 years. The age at the last time of observation varied from 5 to 23 years, the average for the entire group being 14 years. From two to nineteen years had elapsed since the onset, the average duration being seven and one-half years. The differences in the death rate between this and other groups studied may be explained largely on the original criteria for selection perhaps more than by the intrinsic variation in the severity of the disease in different localities. In Ash's group there was a startling death rate in the children among whom the course of the disease was actually ten years or more. Of eighty-seven children traced after an average period of twelve years, 44.8 per cent were dead. Of 121 children with rheumatic infection, 40.5 per cent were dead ten years after the onset. Among the group of children whose infection had originated during the five years from 1922 to 1926, however, there were approximately twice as many deaths as among the group whose disease had started within the five years from 1927 to 1931. The meaning of this difference is not quite clear. It was evident, however, from her studies of the clinical nature of the infection and complications that the course of the disease is modified by such variables as sex, racial origin, age at the onset of the infection and calendar year of the origin. Among the clinical manifestations, pericarditis, rheumatic pneumonia, involvement of both aortic and mitral valves, the early appearance of a buttonhole stenosis and subcutaneous nodules bear the most ominous prognosis. Uncomplicated chorea is a mild manifestation. Epistaxis, abdominal pain, hematuria and multiform cutaneous eruptions may be placed in an intermediate group from the standpoint of their prognostic significance. There is some evidence that within recent years there has been a lowering in the mortality and in the incidence of cardiac involvement, though to what

1. Wolffe, J. B., and Brim, C. J.: The Abdominal Syndrome of Rheumatic Disease in Childhood, Am. J. Dis. Child. **52**: 296 (Aug.) 1936.

2. Ash, Rachel: Prognosis of Rheumatic Infection in Childhood, Am. J. Dis. Child. **52**: 280 (Aug.) 1936.

factors this is due and whether the apparent improvement will persist remain uncertain.

This highly fatal and crippling disease originating most frequently in childhood is worthy of the closest scrutiny. Since available methods of studying the disease in animals are essentially lacking, the careful observation of the individual manifestations of the disease and the lessons which statistical studies can supply furnish the most suitable angle for prophylactic and therapeutic attack. These two papers furnish creditable evidence of the value which such methods can supply.

ANTIANEMIC SUBSTANCE IN NORMAL HUMAN URINE

Recent experimental work on the etiology of pernicious anemia has indicated that in normal persons, as contrasted with patients subject to pernicious anemia, an erythropoietic principle is formed by the interaction of gastric juice and some other material, perhaps of dietary origin, and that this substance is subsequently absorbed and stored in the liver. Apparently, in the normal person a sufficient concentration of the hematogenic principle is maintained in the blood stream to promote the normal maturation of the red blood cells in the bone marrow. It seems logical, therefore, to expect that a small amount of the "antianemic" substance might escape from the blood stream into the urine and that a careful examination of the latter fluid might reveal its presence.

A group of investigators[1] at the University of Louisville, in a study of this question, have used the reticulocyte response of pigeons as an index of the erythropoietic potency of the test substances. Heated and unheated sterile morning specimens of human urine from six normal subjects were injected intramuscularly for five consecutive days into pigeons in amounts varying from 0.1 to 1.5 cc. per hundred grams of body weight. The proportion of reticulocytes in the blood of the test birds was determined daily for two weeks prior to injection, in order to determine the basal reticulocyte level, and then daily for six weeks after injection. Since nearly all pigeon erythrocytes contain at least one or more granules of a substance staining blue with the reticulocyte stain, only those cells which showed a moderately heavy or heavy reticulation were counted as reticulocytes. The results obtained indicated that significant increases in the percentage of reticulocytes occurred in most instances following the injection of even the smaller doses of unheated urine, whereas the responses from injections of the heated samples were of less magnitude and indeed were frequently absent, particularly if the urine had been heated in free access to air. The peak of the reticulocyte rise occurred on an average of fifteen days after the first injection, and the degree of the reticulosis obtained in many instances compared favorably with that obtained with a potent liver extract injected intramuscularly under comparable experimental conditions. These results, the authors believe, indicate the presence in normal human urine of some substance with a reticulocyte-stimulating activity. Furthermore, the data suggest that the concentration of the erythropoietic substance in urine is roughly one-tenth that in the liver extract employed. In further studies of a preliminary nature, some evidence was obtained which indicated a close similarity between the urinary hematogenic substance and the antianemic principle of liver. Both are partially at least thermostable, particularly in the presence of air; both are nonvolatile, and the solubilities of the two substances in different solvents appear to be similar.

Within the past few months, reports have appeared describing an erythropoietic activity of normal urine when administered to rats[2] or to guinea-pigs.[3] Likewise another investigator[4] has found that normal human urine administered rectally to patients with pernicious anemia produced a reticulocyte response. Suggestive as the results of the foregoing investigations may be, adequate confirmation of the work is still to be desired. According to some investigators the pigeon is an extremely variable, if not wholly unreliable, test animal for antianemic preparations, and similar criticisms have been made of the rat and the guinea-pig. Even patients with pernicious anemia are known to give reticulocyte responses to inert substances at some times. Nevertheless, reports of further work on the alleged erythropoietic principle of normal human urine, particularly studies of the effect of purified extracts in sufficient numbers of proved cases of pernicious anemia, will be awaited with interest.

1. Wakerlin, G. E., and Bruner, H. D.: Presence in Normal Human Urine of a Reticulocyte-Stimulating Principle for the Pigeon, Arch. Int. Med. **57**: 1032 (May) 1936.

2. Leiner, G.: Ueber antianämisch wirksame Substanzen im Harn, Wien. klin. Wchnschr. **48**: 559 (May) 1935.

3. Walters, O. S.: Reticulocytogenic Action of Pernicious Anemia Urine Extracts, Proc. Am. Physiol. Soc., March 1936, p. 158.

4. Decastello, A.: Ueber antianämisch wirksame Substanzen im Harn, Med. Klin. **31**: 377 (March) 1935.

OSMOTIC EFFECT OF CALCIUM IONS IN THE BLOOD

The biochemical relationships of calcium have received much attention and have become reasonably well defined. The recognition of the indispensability of this element in nutrition, the discovery of the calcium-mobilizing power of the hormone of the parathyroid glands and the demonstration of the influence of vitamin D on the utilization of calcium have added impetus to the already vigorous trend of investigation of the state in which this element exists in blood and other body fluids and the manifold functions it fulfils in the organism. The total calcium concentration in the serum remains rather constant—close to 10 mg. per hundred cubic centimeters. Physiologic studies involving the

variation of this value have demonstrated that the level of blood calcium constitutes one of the equilibriums on which life depends. Perhaps the clearest description of the probable physical state of this element in the serum has been given by McLean and Hastings.[1] From data on the blood of several species of experimental animals and of man they have concluded that the concentration of calcium ions depends on the serum protein concentration, and a mass action formula has been devised involving serum protein, calcium proteinate and calcium ions which fits the experimental observations. According to them, about half the total calcium of the serum is ionized and corresponds to that previously known as the "diffusible" or "ultrafiltrable" fraction, as it was known to pass through artificial membranes, whereas the remainder is almost all in combination with protein in a physical form not passing through the membranes.

Using the laboratory models as a guide, the physiologist has employed the in vitro observations as a basis for explaining the situation in the living organism as regards the physical state of the serum calcium and the consequent behavior as an electrolyte. Thus, approximately half of the calcium is assumed to pass freely across the capillary wall and to behave from the physicochemical point of view much as do the other inorganic ions. This view has received support from the comparison of the concentration of calcium in the plasma with that in cerebrospinal fluid, protein-poor edema fluid, serous exudates and transudates and synovial fluid; under ordinary conditions, all these body fluids contain roughly an amount of calcium corresponding to the "diffusible" portion of the calcium of the plasma. However, recent studies of Keys and Adelson [2] have thrown doubt on the ready diffusibility of the ionized calcium of the blood. Healthy young men were subjected to brief bouts of severe exercise. It has previously been shown that under these conditions the oxygen capacity and the plasma protein concentration increase, whereas there is a marked loss of water from the blood. The recent experiments show that there also takes place a rise in concentration of blood calcium following vigorous exercise. Calculations showed that, were this increase due only to the nondiffusible colloidal calcium (a reasonable assumption according to the existing views), an impossible hemoconcentration must have occurred. The Harvard investigators are thus forced to the conclusion that the capillary membranes "are by no means freely permeable to Ca^{++} though very slow equilibrium may take place."

The retention within the blood vessels of most or all of the ionized calcium during the period when water has been lost from the circulation would exert a significant effect on the osmotic pressure of the blood. Making certain reasonable assumptions, Keys and Adelson estimate that in their experiments when the blood was concentrated following severe exercise the effective osmotic pressure due to the ionized calcium was from 10 to 20 per cent of the total colloidal osmotic pressure. In the normal steady state the osmotic effect of Ca^{++} in the blood is balanced by that in the extracapillary tissue fluid; the greater the hemoconcentration, the more effective does the Ca^{++} of the plasma become in restoring the blood volume to normal. These newer observations add further to the significance of calcium in the organism; to its other virtues must be added that of promoting homeostasis through resistance of changes in blood volume, a property dependent on the difficult diffusibility of this element.

1. McLean, F. C., and Hastings, A. B.: Am. J. M. Sc. **189**: 601 (May) 1935.
2. Keys, A., and Adelson, L.: Am. J. Physiol. **115**: 539 (May) 1936.

Current Comment

BLOOD VISCOSITY IN HEART FAILURE

In comparison with distilled water, the average normal viscosity of human blood has been found to be about 5.32; any viscosity above 6 or below 4 has been considered to be abnormal. Some blood viscosity values have been reported by Markson [1] in a clinical study of congestive heart failure. Among twenty-six cases, twenty-two showed viscosity values that varied from 12.4 to 6.5, three viscosity readings between 4 and 5, and one a viscosity reading below 4. The high viscosity values found were generally associated with an increase in the red cell count and in the size of the individual cell; two cases of syphilitic aortic regurgitation, mitral regurgitation and congestive heart failure were exceptions to the increase in cell size and cell count. The case in which the viscosity was under 4 was one of infective endocarditis and the blood culture was positive for the streptococcus. When gross edema was present, the blood viscosity appeared lowered in association with a diminished red cell count; these values rose rapidly however when diuresis was established, and the edema subsided. Thus when the condition improved under treatment there was a definite fall in the blood viscosity to normal limits in most of the cases and also a reduction in the red cell count and in the diameter and volume of the red cells. The administration of oxygen to the point of relief of dyspnea and cyanosis caused a slight but consistent reduction in the blood viscosity and also in the size and number of the red cells. The same changes occurred when venesection was performed. It would therefore seem that the increase in blood viscosity in congestive heart failure is related to the size of the red blood cells as well as to their number. An increase in the viscosity of the plasma is probably an additional factor. Sahli [2] quotes Hamburger as having shown experimentally many years ago that carbon dioxide in the blood raises the viscosity by increasing the size of the cells. Now the clinical study by Markson also seems to indicate a relation between enlargement of the red

1. Markson, Arthur: Blood Viscosity in Congestive Heart Failure, Glasgow M. J. **7**: 201 (May) 1936.
2. Sahli, Hermann: Diagnostic Methods of Examination, ed. 2, Philadelphia and London, W. B. Saunders Company, 1918, p. 851.

cells and the increase in carbon dioxide in the blood in patients with congestive heart failure. The administration of oxygen to these patients reduced the blood viscosity less definitely than did general therapeutic measures and rest in bed. In the exceptions noted in the cases of infective endocarditis, the low viscosity was probably related to severe secondary anemia and to the bacterial toxins in the blood. This investigation confirms Allbutt's [3] statement that in heart disease the excess of carbon dioxide raises the blood viscosity while access to oxygen lowers it and causes a reduction in the number of red cells. It also confirms the observation of others [4] that in heart failure without edema blood viscosity tends to be increased, while in heart failure with edema blood viscosity is often decreased.

Medical Economics

VITAL STATISTICS IN SICKNESS INSURANCE

Vital statistics, however imperfect, are one of the chief means now available for measuring health, longevity, and the progress of medical service in the battle against disease. Medical service is, to be sure, not the only element affecting morbidity and mortality statistics. Economic and social environment both past and present may have effects which cannot be accurately isolated by any present-day statistical technic. When all these modifying elements are taken into consideration, however, we are still faced with the fact that the rate of decline in disease, the length of life, and morbidity and mortality in general have declined in a ratio that more closely follows the progress of medical service than any of the other elements.

The health organization of the League of Nations compiles vital statistics for most of the world.[1] The most improved statistical technic is used to make these figures comparable. If it is possible to provide better medical service to the mass of the people by means of compulsory sickness insurance than through the private independent practice of medicine, that fact should in some way be reflected in these statistics.

The latest compilation of the Health Section of the League of Nations of the general death rate for all the reporting countries covers the period from 1911 to 1934. The statistics are standardized so as to allow for differences in ages in the different countries, but not of course for general social conditions. The countries that in 1934 had a death rate of less than 10 per thousand are the Union of South Africa, Australia, Canada, New Zealand, Norway and the Netherlands. Only Norway among these has a system of compulsory health insurance that has lasted for a considerable time; that of the Netherlands was introduced about five years ago.

The United States death rate is calculated at 11 per thousand. This includes the Southern states, with a colored population not found in any European country. If this section were excluded and only the states having a population and a geographic location comparable to that of the European nations with compulsory insurance systems were considered, this country would show a lower death rate than that of any of the insured countries.

Only one South American country, Chile, has a system of compulsory sickness insurance. This country had a death rate of 26.8 in 1934 as compared with 11.8 in Argentina and of 10 in Uruguay, in neither of which countries is there an insurance system.

A better test of the efficiency of medical service is found by a study of the death rates from certain diseases that are peculiarly susceptible to medical treatment. Diphtheria is one of the best of such tests. A comparison of the insurance and noninsurance countries with regard to diphtheria morbidity and mortality has previously been made.[2]

According to the Annual Epidemiological Report of the League of Nations, previously quoted, there was no city in the United States or Canada that had a diphtheria mortality rate of more than 6 per hundred thousand in 1934, with the exception of New Orleans, with 6.2 and of Quebec with 12.4. On the other hand, the total mortality rate for diphtheria in fifty-two German cities was 11 per hundred thousand. In 121 English cities this rate was 11.6 per hundred thousand, and in fifty Spanish cities, without health insurance, the rate was 5.2. In Australia (without health insurance) the rate varied from 1.4 in Auckland to 8.5 in Perth, while Christchurch in New Zealand (without compulsory health insurance) had no deaths from diphtheria.

Tuberculosis is another disease in which the morbidity and mortality rates are affected by the character of medical service. A detailed comparison of the tuberculosis sickness mortality rates in insurance and noninsurance countries was published in THE JOURNAL of April 20, 1935.[3] The recent report of the League of Nations confirms the conclusions there made that the rate of decline in deaths from tuberculosis is more rapid in noninsurance than in insurance countries. The effect of the colored population makes the comparison of tuberculosis mortality rates highly disadvantageous to the United States, but, if the white population alone is considered, the death rate from tuberculosis is lower in nearly every section of the United States than in the European countries having elaborate systems of sickness insurance.

Infant mortality is also considered a general test of the quality of medical service. In 1934 the deaths of children under 1 year, per thousand live births, in the Union of South Africa was 61; Canada, 72; United States, 60; Australia, 44, and New Zealand, 32. These are all countries which do not have sickness insurance. The rate in some of the leading countries having highly developed systems of sickness insurance was as follows: Germany, 66; England and Wales, 59; Denmark, 64; Scotland, 78. Only three European countries had rates much below these. These were the Netherlands, 43; Sweden, 47, and Switzerland, 46.

Perhaps a fairer comparison is found when the statistics of infant mortality in the larger cities are compared. In the United States the mortality per thousand births of infants under 1 year of age was, in 1934, as follows:

Boston	57	Los Angeles	53
Chicago	48	New York	52
Cleveland	44	Philadelphia	54
Detroit	50	Toronto	48

In Australia and New Zealand the mortality in the same year was as follows:

Adelaide	40	Melbourne	48
Auckland	38	Perth	41
Brisbane	43	Sydney	44
Christchurch	39	Wellington	41

In none of these cities is there any system of compulsory sickness insurance. In the insured nations of Europe, fifty-two German cities had an infant mortality of 60; in 121 English cities, 63; in Berlin, 59; in Glasgow, 98, and in London, 67. In South America in Santiago, Chile, with a system of compulsory insurance there were 244 deaths per thousand of infants under 1 year. Buenos Aires in Argentina, with no insurance, had 63.

The fact that by all these tests the countries without sickness insurance consistently make a better showing than those in which a large percentage of the population are cared for under insurance systems would seem to justify the conclusion that the people generally receive a better medical service where private practice is maintained than where the physicians are required to practice under insurance regulations.

3. Allbutt, T. C.: Quart. J. Med. **4**: 342, 1910-1911.
4. Gulland, G. L., and Goodall, Alexander: The Blood, ed. 3, Edinburgh, W. Green & Son, 1925, p. 40.

1. Annual Epidemiological Report, Corrected Statistics of Notifiable Diseases for the Year 1934. Published by the Health Section, Geneva, 1936. Figures in the text are taken from this unless otherwise stated.

2. Influence of Sickness Insurance on Diphtheria Morbidity and Mortality, J. A. M. A. **104**: 1335 (April 13) 1935.
3. Tuberculosis and Insurance, J. A. M. A. **104**: 1423 (April 20) 1935.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ALABAMA

The Poliomyelitis Situation.—The state health officer of Alabama reports that 247 cases of poliomyelitis were reported in the state from June 1 up to August 7. The heaviest concentration has been in Lauderdale, Limestone, Colbert, Morgan, Cullman and Jefferson counties. Birmingham is in Jefferson County, where forty-seven cases have occurred. Up to June 1 eleven cases had been reported.

Society News.—At a meeting of the Alabama State Association of Railroad Surgeons in Birmingham, July 10, speakers included Drs. Samuel Kirkpatrick, Selma, on "Management of Eye Injuries by the Local Surgeon," and R. W. Waldrop, Bessemer, hernia. Dr. H. Earle Conwell, Birmingham, president of the Jefferson County Medical Society, displayed lantern slides of "Compressed Fractures of the Spinal Vertebrae."

CALIFORNIA

Western School of Public Health. — The University of California and Stanford University have organized a Western School of Public Health to assist health departments of western states in the training of public health personnel. Social security funds are used to finance the school and the education of certain public health workers. Health officers, public health nurses, sanitary inspectors, public health statistical technicians and public health laboratory technicians in the ten western states are eligible on recommendation of their health officers for attendance at these courses, which will be given during the summer months. The object is to train those who are already employed in health departments, provided they are considered worthy of receiving additional education. Applicants for the regular work, which may lead to a degree in public health, will be asked to meet definite matriculation requirements and must be within certain specified age limits.

COLORADO

Cragmor Reopens the Main Building.—The main building of Cragmor Sanatorium, at Colorado Springs, which was closed during the recent reorganization of the institution, has been opened after a complete renovation. Under the reorganization (THE JOURNAL, March 14, p. 927) the sanatorium was incorporated as a "nonprofit, nonsectarian organization created for benevolent, charitable and humanitarian purposes and for the treatment of tuberculosis and other ailments" as well as for research work. It was established in 1906 with accommodations for twenty-five patients; its present capacity is 130 beds.

CONNECTICUT

New Milk Regulation Adopted.—The New Haven Board of Health recently adopted a regulation requiring that all milk or cream brought into or produced in the city, for sale within New Haven, must be pasteurized or come from accredited certified herds or both.

Coordinating Agencies in Cancer Survey.—The *Connecticut Health Bulletin* announces the completed plan of organization for the statewide cancer survey now under way. The state department of health, functioning through its bureau of preventable diseases, has recently become a coordinating unit in this program through an act of the legislature. It will handle statistical analyses of cancer mortality, tabulation and analysis of cancer clinic records, and public education, cooperating with the state tumor committee of the Connecticut State Medical Society. This committee, appointed to carry on an educational program, now has two active committees, publicity and scientific. The latter has been instrumental in organizing the Association of Connecticut Tumor Clinics, of which there are about sixteen now operating at various general hospitals in the state. The first step in the survey was a statistical study made by Mr. Herbert F. Hirsche and the appointment of Dr. Matthew H. Griswold, Kensington, to a newly created position as public health physician in the state department of health to specialize in cancer work (THE JOURNAL, July 4, p. 43).

FLORIDA

Personal. — Dr. Ralph E. Stevens, health officer of St. Petersburg, has been named chief physician at the Florida State Hospital, Chattahoochee, succeeding Dr. James H. Pound, who resigned.——Dr. Thomas E. Morgan, Jacksonville, has been appointed in charge of the newly organized health unit in Pinellas County, with headquarters in Clearwater.——Dr. James Willard McMurray, Bartow, has been appointed district health officer of West Florida with headquarters at Marianna.

Society News.—At a meeting of the Lake County Medical Society, June 1, Dr. John S. McEwan, Orlando, discussed "Traumatic Surgery."——The Florida Medical Association will hold a "stag" picnic at the Dudsdread Country Club, Orlando, August 29.——Drs. Emil Novak and John A. Tompkins Jr., both of Baltimore, were guests of honor at a buffet supper given by the Orange County Medical Society at the Orlando Country Club, June 27.——At a meeting of the Shrine Club of the Pinellas County Medical Society in St. Petersburg, June 19, Dr. Annette M. Bieker, St. Petersburg, read a paper on "Ultraviolet Ray in the Treatment of Erysipelas."

Graduate Institutes. — The Florida Medical Association, cooperating with its committee on maternal welfare, sponsored a series of graduate medical institutes on maternal and child health, June 1-16. Each institute lasted two days and consisted of afternoon and evening sessions, with Drs. Everett D. Plass, professor and head of the department of obstetrics and gynecology, State University of Iowa College of Medicine, Iowa City, and Samuel F. Ravenel, pediatrician, Greensboro, N. C., as the lecturers. The institutes were conducted in cooperation with the local medical societies and were held in West Palm Beach, Miami, Fort Myers, Tampa, Lakeland, Orlando and Daytona Beach.

IDAHO

New Health Units.—Dr. Marion W. Caskey, Taylorsville, Ky., has been appointed head of a new health unit at Lewiston, one of ten to be established in the state. Dr. Lester C. Krotcher, Coeur d'Alene, has been placed in charge of a unit at Twin Falls.

ILLINOIS

Memorial Archway to Leonard Wood.—A stone archway was dedicated at Fort Sheridan, July 28, as a memorial to Major Gen. Leonard Wood, founder of the Citizens Military Training Camps. The archway, which stands at the entrance to the citizens military training camp area, was built by men of the army post under the auspices of the Chicago Historical Society and the Military Training Camps Association. General Wood graduated from Harvard Medical School, then practiced medicine in Boston, then was appointed an assistant surgeon in the army in 1886. He had a distinguished record in the Spanish-American War, after which he was appointed military governor of Cuba. He was commissioned brigadier general in the regular army in 1901 and major general in 1903. He served in the Philippines as governor of the Moro province from 1903 to 1906 and as commanding general of the Philippine Division until 1908. General Wood was partly responsible for the creation of the general staff of the army and served as its first chief from 1910 to 1914. He originated the so-called Plattsburg plan of training reserve officers and during the World War trained the eighty-ninth division of the National Army, and the tenth division of the regular army. In 1921 he was made chairman of a special commission to the Philippine Islands, and then governor general, a position he occupied at the time of his death in 1927.

Chicago

Society News.—At a recent meeting of the Chicago Urological Society, the following officers were chosen: Drs. Harvey A. Berkey, president; William J. Baker, vice president, and Colquitt Otis Ritch, secretary.——Newly elected officers of the Chicago Society of Internal Medicine are Drs. Walter L. Palmer, president; Andrew C. Ivy, vice president, and Clarence F. G. Brown, secretary.

Graduate Course on Tumor Pathology. — A graduate course in tumor pathology will be held September 21-27, with morning sessions at the Palmer House and afternoon sessions at Michael Reese Hospital. Wednesday September 23 the program will be offered at the Veterans' Administration Facility, Hines, Ill. The course is arranged in the form of clinics, lectures, demonstrations and round table conferences, and speakers will include Sir George Lenthal Cheatle, London, England; Dr. Henri Coutard, director of x-ray therapy, Curie Institute, Paris, France; Dr. Max Cutler, director of the tumor clinic,

Michael Reese Hospital; Arthur H. Compton, Ph.D., professor of physics, University of Chicago, and Gioacchino Failla, D.Sc., physicist to Memorial Hospital, New York. At the banquet in the Palmer House Saturday evening, Dr. Morris Fishbein, editor of THE JOURNAL, will deliver an address.

Fund for Visiting Professorship.—A fund has been established at the University of Chicago in memory of the late Dr. George Neil Stewart, from 1905 to 1907 professor of physiology at the university, and subsequently until his death in 1930 professor of experimental medicine and director of the H. K. Cushing Laboratory of Experimental Medicine at Western Reserve University School of Medicine, Cleveland. The fund, to be known as the G. N. Stewart Memorial Fund, is to be devoted to the research of Dr. Julius M. Rogoff, who has been appointed visiting professor of physiology. Dr. Rogoff, who collaborated with Dr. Stewart at Western Reserve for fifteen years, was until 1934 associate professor of experimental medicine. Since that time he has continued his investigations at the University of Chicago on the physiology of the adrenal glands, with particular reference to their relations to diabetes and hypertension. The fund was established through the contributions of the Louis D. Beaumont Trust, N. L. Dauby, Richard H. Kohn, Frances W. Lang and Howard E. Wise, Cleveland.

IOWA

Society News.—At a meeting of the Buchanan County Medical Society, June 11, Dr. Lawrence P. Engel, Kansas City, Mo., among others, discussed "Empyema of the Chest."—— Dr. Frank H. Krusen, Rochester, Minn., addressed the Floyd County Medical Society in Charles City, June 23, on "Relationship of Physical Therapy to General Practice."——The Hardin County Medical Society was addressed in Iowa Falls, June 30, by Dr. Samuel F. Haines, Rochester, Minn., on "Glands of Internal Secretion."——Speakers before the Jackson County Medical Society in the Bellevue State Park, June 18, were Drs. Howard R. Hartman, Rochester, Minn., on "Disease of the Biliary Tract and Jaundice"; James C. Kessler, Iowa City, "Common Skin Diseases," and Horace M. Korns, Iowa City, "Recent Advances in Diagnosis and Treatment."—— Dr. Herbert W. Rathe, Waverly, discussed "Coronary Artery Disease" before the Tama County Medical Society in Tama, June 5.——At a meeting of the Webster County Medical Society in Fort Dodge, June 19, Dr. William A. O'Brien, Minneapolis, read a paper entitled "Medicine Marches On."

MASSACHUSETTS

Personal.—Dr. Leroy M. S. Miner, professor of clinical oral surgery and dean, Harvard Dental School, was installed as president of the American Dental Association, July 16. Dr. Miner took his dental degree at Harvard and his medical degree at Boston University School of Medicine.——Dr. K. H. Giertz, Stockholm, recently gave three lectures at the Peter Bent Brigham Hospital on "Twenty-Five Years of Experience in the Treatment of Peritonitis," "Thrombo-Embolic Disease and Its Surgical Treatment," and "Development of Respiratory Apparatus for Thoracic Surgery."

MICHIGAN

Expansion of Health Activities.—An allocation of $280,293 for public health activities in Michigan under the Social Security Act has been made available to the state department of health for the current fiscal year. In addition, $89,352.85 has been assigned to the bureau of child hygiene and public health nursing by the children's bureau; this money will be used to extend services to mothers and children in rural areas, in areas suffering from economic distress and among groups in special need. A new bureau of industrial hygiene has been created in the state department of health, and Menominee County has voted to establish a full time department of health by October, newspapers reported.

Personal.—Dr. Mark S. Knapp, Ann Arbor, has resigned as executive secretary and director of medical research of the Horace H. and Mary A. Rackham Fund, Detroit. Dr. Knapp had held the position since the fund was created in 1934.—— Dr. Walter E. Mercer, for four years health officer of Webberville, has been placed in charge of the bureau of child health of the Lansing department of health.——Dr. Frederick G. Novy, dean emeritus and professor emeritus of bacteriology, University of Michigan School of Medicine, Ann Arbor, received the honorary degree of doctor of laws at the ninety-second commencement of the University of Michigan. This was the fiftieth anniversary of Dr. Novy's graduation from the university.

MINNESOTA

Society News.—Dr. Everett C. Hartley, St. Paul, addressed the Northwestern Pediatric Society in Rochester, July 11, on "Maternal and Child Welfare Legislation." Dr. Waltman Walters, Rochester, showed a motion picture on "Surgical Management of Congenital Abnormalities of the Genito-Urinary Tract."

Hospital News.—About 200 children on the waiting lists of the Gillette State Hospital for Crippled Children, St. Paul, the Eustis Children's Hospital and the Shriners' Hospital, Minneapolis, will be hospitalized with social security funds now available. Some of these children have been waiting as long as two or three years, it was reported. Dr. Herman E. Hilleboe, St. Paul, will direct the state's crippled children program.

NEBRASKA

Health at Omaha.—Telegraphic reports to the U. S. Department of Commerce from eighty-six cities with a total population of 37 million for the week ended August 1 indicated that the highest mortality rate (20.1) appeared for Omaha and that the rate for the group of cities was 9.9. The mortality rate for Omaha for the corresponding week of 1935 was 20.5 and for the group of cities, 10. The annual rate for the eighty-six cities was 12.8 for the thirty-one weeks of 1936, as against a rate of 11.9 for the corresponding period of the previous year. Caution should be used in the interpretation of these weekly figures, as they fluctuate widely. The fact that a city is a hospital center for a large area or that it has a large Negro population may tend to increase the death rate.

State Council on Medical Education.—The Nebraska State Medical Association has formed a council on medical education to direct its educational activities. The council consists of a general chairman, the deans of the two medical schools in the state, the chairman of each educational activity, the president, the president-elect and the executive secretary of the state association. Dr. William P. Wherry, Omaha, is general chairman, and Dr. J. Stanley Welch, Lincoln, vice chairman. Other members are Drs. Charles W. M. Poynter, dean and professor of anatomy, University of Nebraska College of Medicine, Omaha; Bryan M. Riley, dean, Creighton University of Medicine, Omaha; Joseph D. McCarthy, Omaha, speakers' bureau; Earl C. Sage, Omaha, maternal welfare; Ernest W. Hancock, Lincoln, tuberculosis; James F. Kelly, Omaha, cancer; Claude T. Uren, Omaha, hard of hearing, and James E. M. Thomson, Lincoln, fractures; George W. Covey, Lincoln, president; Roy W. Fouts, Omaha, president-elect, and Mr. M. C. Smith, Curtis, executive secretary. The council held its first meeting June 23 and made plans for its work. A faculty from members of the association will be organized to prepare addresses to be used in graduate courses, talks for presentation to lay audiences and discussions to be used in county and district medical society meetings. The council will act as editorial critic and adviser to members in preparation of these addresses if desired. It was also agreed that whenever possible the results of special investigations become part of the educational program and that the activities of the council be united whenever possible with those of national and governmental units such as the state board of health, the American Society for the Control of Cancer and the National Tuberculosis Association.

NEW HAMPSHIRE

Food Poisoning Following Picnic.—An outbreak of food poisoning occurred in Manchester July 5 following a banquet during a convention of the organization known as "Jehovah's Witnesses." About 700 attended the meeting, which was held in a hall that had only a small refrigerator. The banquet began at 1 p. m. and about 4 o'clock during a speaking program the first victims began to be sick. An hour and a half later, when the health officer arrived, everything had been packed up, including the remains of any food, and a hasty exodus was in progress. About eighty-seven persons are known to have been treated in various towns in New Hampshire, having been stricken at intervals along their way, but the total number affected will never be accurately known, the health department bulletin pointed out. Symptoms were typical of food poisoning: nausea, dizziness, vomiting, diarrhea and intense abdominal pain. In spite of the fact that adequate tests could not be made, the health officials believed that the illnesses were caused by infection of one or more items of the food by some organism with subsequent rapid multiplication resulting from failure to hold the food at a lowered temperature.

NEW JERSEY

Society News.—Dr. Herbert T. Kelly, Philadelphia, discussed diabetes at a meeting of the Cumberland County Medical Society, Millville, June 9.——Speakers before the Middlesex County Medical Society, Marlboro, June 17, were Drs. Joseph Berkeley Gordon, on "Methods of Committing Mental Patients in New Jersey"; Elsworth F. Baker, "Functional Psychoses," and Diomede Guertin, "Organic Psychoses."——Dr. Harrison S. Martland, Newark, addressed the Monmouth County Medical Society in June on "Medical Detection of Crime."

State Society Surveys Hospitals.—The committee on medical practice of the Medical Society of New Jersey is making a survey of the general hospitals in the state. A sixteen page questionnaire has been distributed to about eighty hospitals. Questions are asked about administration, rates, business management, the medical staff and its relation to the administration, methods of appointment, dispensary and outpatient staff, control of patients, compensation and liability cases, laboratory service, hospitalization insurance and the pharmacy.

NEW YORK

Memorial to Dr. Jacobi.—A grove of trees near the summer home of Dr. Abraham Jacobi at Bolton Landing on Lake George was dedicated as the Abraham Jacobi-Carl Schurz Memorial Park, June 13, at the close of the annual meeting of the American Pediatric Society. A boulder with a bronze tablet was placed in honor of Dr. Jacobi, and the Carl Schurz Memorial Bench, formerly by the roadside a short distance from the grove, was moved and rededicated. Dr. Jacobi, who died in 1919, was a pioneer pediatrician; he occupied the first chair in pediatrics in America and was President of the American Medical Association in 1912. The grove, which has been given to the village by Dr. Jacobi's daughter, Mrs. George McAneny, is part of a wood where Dr. Jacobi and his friend Carl Schurz spent many hours in their declining years. Dr. Frederic W. Schlutz, Chicago, presided at the ceremony, and speakers were Dr. Isaac A. Abt, Chicago; Dr. Frederic E. Sondern, New York; Dixon Ryan Fox, Ph.D., Schenectady, president of Union College and president of the New York State Historical Society, and Mr. McAneny, son-in-law of Dr. Jacobi.

New York City

Society News.—Speakers at the meeting of the Medical Society of the County of Queens, September 29, will be Drs. Royd R. Sayers of the U. S. Public Health Service, Washington, D. C., on "Silicosis, Evaluation in Relationship to Tuberculosis"; James Burns Amberson Jr., "Epidemiologic and Social Phases of the Tuberculosis Problem," and Abraham Braunstein, "Practical Application of the Newer Methods of Treatment of Tuberculosis."

Study of Silicosis.—The New York City Department of Health, Cornell University Medical College, New York Hospital and the New York Tuberculosis and Health Association are conducting a study of silicosis, made possible by an appropriation of $91,944 from the Works Progress Administration. About 3,000 workers exposed to dust will be examined and some will be admitted to wards of New York Hospital, where intensive bacteriologic and pathologic as well as clinical studies will be carried out.

Personal.—Dr. John J. Kindred, who is also a lawyer, received the honorary degree of doctor of laws at the recent commencement of John B. Stetson University, DeLand, Fla., where he has for several years taught medical jurisprudence. Dr. Kindred was the first president of the National Association of Private Psychiatric Hospitals, organized in 1934. He was for ten years representative in Congress from the second New York congressional district.——The honorary degree of doctor of science was conferred on Dr. Simon Flexner, member emeritus of the Rockefeller Institute for Medical Research, by the National University of Ireland, Dublin, July 20.——Dr. Alfred Appelbaum has been appointed assistant professor of ophthalmology and assistant attending ophthalmologist at the New York Medical College and Flower Hospital.

Max R. Schneller Sentenced to Prison.—Maximilian R. Schneller, who has practiced medicine without a license in various states and served penitentiary sentences for various offenses, has been sentenced again for larceny. Schneller's latest legal entanglement occurred while he was with the New York City Board of Education on an assignment from the Works Progress Administration as a psychologist and psychiatrist. He took from the mail a check made out to a teacher, and endorsed it. On representation of his counsel that a plea of guilty to attempted forgery would necessitate his deportation to Germany, where he would be executed as a result of conviction of treason during the World War, he was allowed to plead guilty to petit larceny instead. Schneller had been paroled in September 1935 from the New York County Penitentiary, to which he was sentenced in April 1934 after he was found to be practicing without legal authorization as physician to Hart's Island Prison (THE JOURNAL, May 12, 1934). The probation department and the psychiatric clinic of the New York Court of Special Sessions made an exhaustive investigation of Schneller's history. It was found that he was born Max Schneller in Munich, Germany, in 1896. In 1912 he was under observation in the psychiatric division of the University of Munich and in 1914 was in a hospital in Tournay, Belgium, with a diagnosis of hysteria, the court reported. Between 1912 and 1923, the year in which he came to the United States, he was several times convicted, once for burglary and once for assisting to treason, among other offenses. The psychiatric examination disclosed no evidence of defective intelligence but a psychopathic personality with extremes of emotional reactions. His attempts to represent himself as a physician indicate a definite pathologic trend, the report said; he has no medical education whatever.

NORTH DAKOTA

Appointments in State Health Department.—Dr. Harriet Bixby, Boston, has been appointed state bacteriologist and Dr. August C. Orr, Sarles, director of the child hygiene division in the state department of health. Dr. Bixby succeeds A. W. Ecklund, Bismarck, who resigned. Dr. Orr's appointment marks reestablishment of the division of child hygiene with social security funds after a lapse of several years.

OHIO

Gift for Research.—The University of Cincinnati has received a gift that in five years will amount to $55,000 from Mrs. Louise Fleischman Yeiser to establish in the college of medicine the Craig Yeiser Memorial Fund in Preventive Medicine. She will give $10,000 a year for five years and an additional $5,000 for equipment to carry on research in preventive medicine in memory of her son, who died in 1935 of pneumonia.

Society News.—The Eighth District Medical Society met at Rocky Glen Sanatorium, McConnelsville, June 25, with the following speakers: Drs. John H. J. Upham, Columbus, President-Elect of the American Medical Association, on "These Changing Times"; Sidney M. McCurdy, Youngstown, "Medical Problems in Industry"; Emery R. Hayhurst, Columbus, "Silicosis," and Walter R. Griess, Cincinnati, "Treatment of Gastric Ulcer, with Special Reference to Emetine Hydrochloride."——Dr. Arthur C. Morgan, Philadelphia, addressed the Summit County Medical Society, Akron, June 2, on "Applied Therapeutics."

Personal.—Dr. William E. Thompson, Bethel, celebrated his one hundred and first birthday July 6.——Dr. William Dean Collier, professor of pathology, St. Louis University School of Medicine, has accepted a position as head of the department of pathology at St. Elizabeth's Hospital, Youngstown, to succeed Dr. Robert B. Poling, who resigned to devote his time to private practice.——Dr. Vaughn L. Hartman, Medina, has been appointed health commissioner of Medina County.——Dr. Cyrus R. Wood, Port Clinton, has been appointed health officer of Ottawa County to succeed the late Dr. Charles B. Finefrock.——Dr. John D. Dunham, Columbus, has been appointed to the city board of health to succeed the late Dr. Wells Teachnor Sr.——Dr. Arthur H. Franks, Akron, recently took a degree in law at the Akron Law School.

PENNSYLVANIA

Hospital News.—Bryn Mawr Hospital recently received $42,000 from the annual Devon Horse Show and County Fair.——The state treasury recently mailed checks amounting to $1,000,000 to state-aided institutions, about half what is due them, it is reported.——St. Mary's Mater Misericordia Hospital, Scranton, has recently opened a tumor clinic. Records accumulated during many years by the late Dr. Jonathan M. Wainwright, Scranton, have been made available to the clinic for study and research. Dr. Wainwright was chairman of the cancer commission of the Medical Society of the State of Pennsylvania.

District Meetings.—The annual meeting of the Eleventh Councilor District of the Medical Society of the State of Pennsylvania was held at Bedford Springs, July 16. Papers were presented by Drs. Roy W. Scott, Cleveland, on "Diagnosis and Management of Coronary Artery Disease"; Randle C. Rosenberger, Rahns, "Foods, Their Preservation and Food Poisoning," and John O. Bower, Philadelphia, "Appendicitis Mortality in the Eleventh Councilor District." The following officers of the state society discussed organization problems: Drs. Alexander H. Colwell, Pittsburgh, president; Walter F. Donaldson, Pittsburgh, secretary, and Chauncey L. Palmer, Pittsburgh, chairman, committee on public health legislation. ——The Ninth Councilor District held a meeting at the Kittanning Country Club July 30, at which Dr. Robert L. Anderson, Pittsburgh, spoke on "Modern Methods of Treating the Enlarged Prostate Gland"; Dr. Maxwell Lick, Erie, "Early Diagnostic Essentials in Abdominal Conditions"; Dr. Laurrie D. Sargent, Washington, "Hypotension," and Dr. Milton M. Auslander, Ernest, "Maternal Mortality in the Ninth Councilor District." Dr. Colwell made an address on "The Incompatibility of the Economics of Business and the Ethics of Medicine"; Dr. Palmer, on "Federal Social Security Contribution to Pennsylvania Health Activities," and Dr. Donaldson, "Our State Society."

RHODE ISLAND

Fiske Fund Prize Essay.—The trustees of the Fiske Fund, administered by the Rhode Island Medical Society, have announced that the subject for the 1937 essay will be "Newer Methods of Prevention and Treatment of Acute Anterior Poliomyelitis." The prize is $250. Competitors should forward copies of their dissertations, marked with a motto, to the secretary on or before May 1, 1937. They must be typewritten, should not exceed 10,000 words and should be accompanied by a sealed envelop bearing the motto on the outside and the name and address of the sender within. The author of the successful dissertation must transfer to the trustees his right, title and interest in it for the use of the Fiske Fund. Letters accompanying the unsuccessful dissertations will be destroyed unopened and the papers may be obtained by their authors if requested within three months. The secretary is Dr. Wilfred Fickles, 184 Waterman Street, Providence.

SOUTH CAROLINA

Society News.—At a meeting of the Fifth District Medical Society in Winnsboro in May, speakers included Drs. Richard M. Pollitzer, Greenville, on infantile paralysis; Henry W. deSaussure, Charleston, fatal accidents of pregnancy, and Austin T. Moore, Columbia, management of fractures.——Speakers at the semiannual meeting of the First District Medical Association at Walterboro, May 28, included Drs. F. Adelbert Hoshall, Charleston, on "Fractures of the Leg" and William H. Prioleau, Charleston, "Removal of Needles from the Hand."——Drs. James R. Howell and William A. Whitlock Jr., Aiken, addressed the Ridge Medical Association, Batesburg, June 15, on "Emergency Operations and Anesthesia" and "Treatment of Hemorrhoids" respectively.

TENNESSEE

New Hospital Superintendents.—Dr. Henry Bryan Brackin, Nashville, has been appointed superintendent of the Davidson County Hospital, near Nashville, to succeed the late Dr. William W. Core.——Dr. Raymond R. Crowe, of the staff of the Davidson County Tuberculosis Hospital, Nashville, has been appointed superintendent to succeed the late Dr. Blackburn G. Tucker.——Dr. Jewell R. Wilson of the staff of the Western State Hospital has been named head of the institution to succeed Dr. Edwin W. Cocke, who resigned recently.

TEXAS

Society News.—At a meeting of the Cooke County Medical Society in Gainesville, June 8, Drs. Milton L. Martin and Priestley Lipscomb, Denton, spoke on medical history and prevention of sinus infection, respectively.——Drs. James Vance and John L. Murphy, El Paso, addressed the El Paso County Medical Society in May on "Intra-Abdominal Ovarian Hemorrhage" and "Varicose Ulcers and Their Treatment," respectively.——At a meeting of the Kaufman County Medical Society, June 2, speakers were Drs. David W. Carter Jr., Dallas, on "Treatment of Diabetes"; Louian C. Carter, Marlin, "Coronary Heart Disease," and Gough H. Alexander, Terrell, "Newer Aspects in the Treatment and Diagnosis of Peptic Ulcer."——Drs. George H. Beavers Jr., and William Porter Brown, Fort Worth, among others, addressed the Tarrant County Medical Society, Fort Worth, recently on "Abruptio Placentae" and "Limitations of Radiation Therapy in Dermatology," respectively.

UTAH

Plague Infection.—According to *Public Health Reports,* bacteriologic examination for plague was positive in a boy bitten by a ground squirrel, June 24, near Beaver, Beaver County. Ground squirrels from a ranch two miles north of Bone, shot June 23, and from a ranch four miles southwest of Bone, June 24, were proved to be plague infected. Fleas taken June 25 and 26 from seventy-five squirrels on the latter ranch were found positive for plague.

WEST VIRGINIA

Physician Appointed to Social Security Council.—Dr. William S. Fulton, Wheeling, has been appointed by Governor Kump to the new State Public Assistance Council, which will carry out the state's social security program under a new state law. Dr. Fulton's appointment is for six years.

Annual Clinic.—The annual program presented by the Golden Clinic of the Davis Memorial Hospital, Elkins, was given July 16. Clinics were conducted in the morning at the hospital. In the afternoon addresses were made by Drs. Moses Paulson, Baltimore, on "Common Diseases of the Digestive Tract"; Albert E. Goldstein, Baltimore, "Renal Disorders in General Practice" and Lloyd F. Craver, New York, "The Lymphomatous Diseases." A motion picture showing a technic for correction of inguinal hernia, produced at the Golden Clinic, was presented. At a banquet in the evening Dr. Robert J. Wilkinson, Huntington, was toastmaster and the speaker was Dr. Frank E. Adair, New York, on "Tumors of the Breast."

WISCONSIN

Graduate Courses.—Three new circuits for the graduate courses in obstetrics and pediatrics conducted with the aid of federal funds have been announced. Drs. Otto H. Schwarz, St. Louis, and Francis R. Janney, Wauwatosa, began one July 20 at Balsam Lake, continuing at Hudson, Menomonie, Eau Claire and Ladysmith. The second began July 27 with Drs. Fred L. Adair, Chicago, and Horace K. Tenney Jr., Madison, as instructors at the following towns: Marinette, Shawano, Fond du Lac, Wausau and Antigo. The third also began July 27 with Drs. John W. Harris and John E. Gonce Jr., Madison, as instructors at Park Falls, Hayward, Superior, Ashland and Rhinelander.

Foundation Patents Pituitary Hormones.—The U. S. Patent Office has recently issued to the Wisconsin Alumni Research Foundation two patents on the isolation and purification of the gonadotropic hormones of the anterior pituitary gland. These patents (Nos. 2030209 and 2030210) were on the application of Frederick L. Hisaw, Ph.D., and Harry L. Fevold, Ph.D., Madison, and were assigned by them to the Wisconsin Alumni Research Foundation. The foundation announces that although it contributed in part to the development of this research through grants in aid, it will administer these patents in a way designed to benefit the public without thought of any financial return other than that required to safeguard and control proper use of the products. Under these conditions Dr. Hisaw and Dr. Fevold will not receive any pecuniary reward for their discoveries.

WYOMING

State Medical Meeting at Cody.—The thirty-third annual meeting of the Wyoming State Medical Society will be held at Cody, August 24-25, under the presidency of Dr. Joseph L. Wicks, Evanston. Scientific papers will be delivered by the following:

Dr. Wicks (presidential address), Forty Years' Progress in Medicine.
Dr. Joseph C. Bunten, Cheyenne, Nephroptosis and Its Treatment.
Dr. George R. James, Casper, Squint—A Problem of the General Practitioner.
Dr. George H. Phelps, Cheyenne, Recent Trends in Obstetrics.
Dr. Reuben J. Boesel, Cheyenne, Injection Treatment of Hernia.
Dr. Peter M. Schunk, Sheridan, Use of the Ultraviolet Ray in the Treatment of Erysipelas.
Dr. Frederick L. Beck, Cheyenne, Acute Otitis Media.
Dr. William Andrew Bunten, Cheyenne, Localization of Brain Tumors.
Dr. Harry H. Wear, Denver, Pyelitis, with Special Reference to Treatment.
Dr. Thomas D. Cunningham, Denver, Diagnosis and Treatment of Peptic Ulcer.

Guest speakers will include Drs. John H. J. Upham, Columbus, Ohio, President-Elect, American Medical Association, on "Heart Disease in Middle and Past Middle Life"; Claude F.

Dixon, Rochester, Minn., "Acute Abdominal Disease"; John R. Nilsson, Omaha, "Surgical Conditions of the Esophagus," and William F. Braasch, Rochester, Minn., "Practice of Medicine Under State Control." There will be a smoker Sunday evening and a golf tournament at the Cody Golf Club, Monday morning. The woman's auxiliary also has a program planned for August 24-25.

GENERAL

Board Examination in Gynecology and Obstetrics.—The American Board of Gynecology and Obstetrics announces that its next written examination and review of case histories will be held in various cities in the United States and Canada, Saturday November 7. Application blanks and booklets of information may be obtained from Dr. Paul Titus, secretary of the board, 1015 Highland Building, Pittsburgh. Applications should be filed in the secretary's office sixty days before the date of examination.

Automobile Deaths Decrease in Six Months of 1936.—There were 500 fewer automobile deaths during the first six months of 1936 than in the similar period in 1935, according to a report in the Chicago *Tribune* based on figures from the National Safety Council. This decrease was noted despite an 8 per cent increase in highway travel in the nation, it was stated. There were 15,390 traffic fatalities up to July 1 this year as compared with 15,890 for the same period last year. Deaths for June of this year, however, were about 5 per cent above those for the same month in 1935. Twelve eastern states having standard drivers' license laws and other effective motor vehicle control measures showed a reduction in automobile fatalities of 10 per cent, contrasted with the national decrease of only 3 per cent, it was stated. Chicago was the only city of more than 500,000 population to show an increase in these deaths during the six months period; the total was 367, one more than for the same period last year.

German Surgical Instruments Not Now Subject to Increase of Duty.—Surgical instruments imported from Germany pursuant to contracts consummated subsequent to July 25, 1936, will not be subject to the increase in duty of 56 per cent of the invoice value that was imposed by a Treasury decision effective July 11 last. This countervailing or increased duty was imposed to offset certain bounties paid by the German government to German exporters of surgical instruments to the United States that enabled such exporters to compete in the domestic markets to the disadvantage of our own manufacturers (THE JOURNAL, **106**:2163 [June 20] 1936). Since the imposition of the countervailing duty, however, the Treasury Department has received official advice that for any transactions concluded after July 25 the German government will neither pay nor permit the payment of any bounty to exporters of surgical instruments to the United States. The countervailing duty remains effective, apparently, with respect to surgical instruments that arrived in this country from Germany between July 11 and July 25 and to shipments contracted for prior to July 25 but arriving after that date.

Annual Congress of Physical Therapy.—The fifteenth annual scientific and clinical session of the American Congress of Physical Therapy will be held at the Waldorf Astoria, New York, September 7-11. An educational conference will be conducted Monday afternoon with the following speakers:

Dr. Oswald N. Andersen, Council on Medical Education and Hospitals, American Medical Association, Chicago, Educational Standards for Physical Therapy Technicians.

Dr. Grant E. Ward, associate in surgery, University of Maryland School of Medicine, Baltimore, Teaching Value of the Cancer Clinic in Medical and Dental Schools.

H. H. Horner, assistant commissioner of higher education, state department of education, Albany, Ten Years' Experience with Licensing Physical Therapists.

Margaret Oliver Hewelett, director, department of occupational therapy, Presbyterian Hospital, New York, Some Aspects of Occupational Therapy as Demonstrated in a General Hospital.

Marion G. Smith, registrar, Chicago, American Registry of Physical Therapy Technicians.

At the opening session, Tuesday evening Dr. William Bierman, New York, who will be installed as president, will speak on "Electricity and Medicine." The fourth annual William Benham Snow Memorial Lecture will be delivered by Major Oral B. Bolibaugh, medical corps, U. S. Army, on "The Rôle of Physical Therapy in Fractures." The session will conclude with an address by Dr. Norman B. Cole, assistant director of physical therapy, Johns Hopkins Hospital, Baltimore, entitled "Pathologic Changes of the Circulation." The general program will include symposiums on iontophoresis, fractures, vascular diseases, dermatology, fever therapy, arthritis, clinics and clinical conferences. The annual dinner will be held Wednesday evening.

Society News.—Dr. Frank H. Lahey, Boston, was chosen president-elect of the American Society for the Study of Goiter at its recent annual meeting in Chicago, and Dr. Nelson M. Percy, Chicago, was inaugurated as president.——Dr. Charles E. Sears, Portland, Ore., was chosen president-elect of the Pacific Northwest Medical Association at its annual session in Portland July 11, and Dr. Russell T. Congdon, Wenatchee, Wash., was installed as president. Vice presidents elected are Drs. Richard C. Monahan, Butte, Mont., and Samuel E. Lambert, Spokane, Wash. The 1937 meeting will be in Great Falls, Mont.——Dr. Marion T. Davidson, Birmingham, was chosen president of the Chattahoochee Valley Medical Association at its recent meeting in Albany, Ga. Other officers are Drs. Edgar H. Greene, Atlanta, and Clayton E. Royce, Jacksonville, vice presidents, and Frank K. Boland, Atlanta, secretary.——The American Association of Industrial Physicians and Surgeons will hold its annual meeting at the Hotel Traymore, Atlantic City, October 5-6. Dr. Volney S. Cheney, Chicago, is secretary.——The Academy of Physical Medicine will hold its annual meeting in Boston at the Hotel Statler, October 20-22.——The thirty-ninth annual meeting of the Association of Surgeons of the Southern Railway System was held in Knoxville, Tenn., June 16-18, with the following speakers, among others: Drs. Edward T. Newell, Chattanooga, on "Treatment of Fractures; Report of 11,000 Cases"; Thomas H. Hancock, Atlanta, Ga., "The Time to Amputate Crushed Limbs"; Wyatt H. Blake Jr., Sheffield, Ala., "Treatment of Skull Fractures and Brain Injuries"; William Battle Malone, Memphis, Tenn., "Gas Gangrene," and Hubert A. Royster, Raleigh, N. C., "The Pressure Dressing."——Dr. William W. Francis, Montreal, Que., was reelected president of the Medical Library Association at its annual meeting in St. Paul recently. Mr. James Ballard, Boston, was made vice president and Miss Janet Doe, New York, reelected secretary. The 1937 meeting will be in Richmond, Va.

CANADA

Society News.—Dr. Myron Metzenbaum, Cleveland, was a guest speaker at the meeting of the Ontario Medical Association in London recently. He conducted a clinic demonstrating a procedure for replacements of dislocations of the lower end of the septal cartilage in children and gave a paper on the subject.——Dr. Gordon C. Kenning, Victoria, was elected vice president and president-elect of the British Columbia Medical Association at the annual meeting in Vancouver in June and Dr. George F. Strong, Vancouver, was installed as president.——Dr. George Clingan, Virden, was elected president of the Manitoba Medical Association at its annual meeting in May.

FOREIGN

British Medical Association.—The one hundred and fourth annual meeting of the British Medical Association was held in Oxford July 17-25, under the presidency of Sir James Barrett, Melbourne, Australia. On the provisional program were noted the names of several American physicians. Papers were presented by Drs. Lloyd D. Felton, Baltimore, on "Prophylaxis of Pneumonia"; Foster Kennedy, New York, "The Neuroses from a Neurologist's Point of View"; Gabriel Tucker, Philadelphia, "Inflammatory Tumors of the True Vocal Cords" and Arthur J. Bedell, Albany, "Choroideremia." Dr. Royal Whitman, New York and London, was scheduled to open a discussion of "Treatment of Intracapsular Fractures of the Neck of the Femur," and Dr. Ralph M. Waters, Madison, Wis., one on "Cyclopropane." Prof. Robert J. Johnstone, professor of gynecology, Queen's University, Belfast, Ireland, was named president-elect and Sir E. Farquhar Buzzard, Oxford, was inducted into the presidency.

Society News.—The fifteenth International Congress for Hydrology, Climatology and Medical Geology will be held at Belgrade, September 25-29. Subjects for discussion will be thermal treatment of diabetes, new problems in the biophysics of water; climate in the prevention and treatment of juvenile tuberculosis, and geology of the spas of Yugoslavia. Information may be obtained from Prof. Milutin Neskovic, 42/1 Rue Nemanzina, Belgrade.——Dr. Anthony Bassler, New York, has been appointed president and Dr. Martin E. Rehfuss, Philadelphia, vice president of the American delegation to the International Congress on Hepatic Insufficiency in Vichy, France, Sept. 16-18, 1937.——The third International Congress for Study of Light will be held in Wiesbaden, September 1-7, under the presidency of Dr. W. Friedrich, Berlin. Subjects to be discussed are physical and biologic bases of phototherapy; light treatment in tuberculosis; use of light in pediatrics, internal medicine and other medical disciplines. The general secretary is Dr. H. Schreiber, Berlin NW 7, Robert Koch Platz 1.

Foreign Letters

LONDON

(From Our Regular Correspondent)

June 27, 1936.

The Prescribing of Hearing Aids

At a joint meeting of the Sections of Otology and Laryngology of the Royal Society of Medicine, Mr. T. E. Cawthorne said that no branch of otology had received less attention than the prescribing of hearing aids, with the result that the deaf turned elsewhere, attracted by extravagantly worded advertisements, the cost of which was reflected in the price they had to pay for their appliances. No wonder that they were satisfied to sacrifice efficient performance for pleasing appearance. The venders filled their pockets by flattering the patient's eye at the expense of his ear. A hearing aid was desirable when the hearing defect was such that, despite treatment, normal methods of communication were impossible or irksome. The complete solution of many complex problems presented by the correction of a hearing defect was not possible in the present state of knowledge, but the invention of the thermionic valve had so increased the amplification of sound that already a great increase in the efficiency of hearing aids had been brought about and it was not beyond the bounds of possibility that as good results would be attained in prescribing hearing aids as had been achieved in prescribing visual aids. Unfortunately there was not at present any standard of performance of hearing aids for the guidance of the otologist or the safety of the patient. The greatest service the otologist could render the incurably deaf was to guide him in the choice of a hearing aid.

Some unit of hearing loss must be used to facilitate understanding between the prescriber and the dispenser. At present the most favored unit was the decibel, which roughly represented the smallest increase in sound intensity appreciable by the normal ear. It was a logarithmic unit; i. e., 10 decibels corresponded to a tenfold increase in sound intensity, 20 to a hundredfold, 30 to a thousandfold. The level for ordinary conversation was about 55 decibels. The method of estimating hearing capacity both for speech and for pure tones lent itself to accurate reproduction, so that improvement with an aid could be measured. The audiometer had the advantage over the tuning fork that its output could be raised, kept constant or increased at will and was susceptible of accurate measurement. It was far quicker and far more accurate than the tuning fork for measuring hearing capacity for pure tones. In a speech test monosyllables should be used, each chosen to accentuate a different vowel or consonant. All patients with pure middle ear deafness could derive benefit from an aid. In deafness with less than 50 per cent of cochlear function the amplification required for an aid was such that its intensity would approach the upper threshold of hearing, and confusion and discomfort would result. The care and upkeep required for valve aids was often more than the patient could afford. A hearing aid department should be essential to every well equipped otologic clinic.

"The Holmes-Adie Syndrome"

At a meeting of the Medico-Chirurgical Society of Edinburgh, Prof. Edwin Bramwell read a paper on a benign condition that is important because it is easily mistaken for syphilis of the nervous system. In the present state of knowledge an etiologic or pathologic terminology is impossible, so he proposed "the Holmes-Adie syndrome," because the two English neurologists mentioned were chiefly responsible for its isolation in 1931. In 1924 he saw a woman, aged 56, of whom it had been noted at the eye department of the Edinburgh Royal Infirmary that she had Argyll Robertson pupils. From there she was sent to the department for venereal diseases, where it was found that the blood Wassermann reaction was negative and the cerebrospinal fluid normal. Professor Bramwell noted that the condition of the pupils was particularly interesting, both being large and immobile to light but contracting on convergence. The left eye on convergence slowly in the course of ten to fifteen seconds came down almost to pinhole size and then slowly dilated, reaching its ordinary size in a minute to a minute and a half. He had never seen anything like this before. The right pupil reacted normally on convergence and did not become nearly so small as the left. Ankle and knee jerks were absent. The immobility of the pupils to light and the absent knee jerks suggested syphilis, but three facts were against this diagnosis: the absence of other symptoms of tabes, the negative Wassermann reaction and the large pupils with the slow contraction of the left pupil on convergence and its still slower dilatation. Professor Bramwell indexed the case as a pupil abnormality with absent tendon jerks and did not commit himself to a diagnosis, but the probability of syphilis must have occurred to him, for he prescribed mercury and iodide.

To the peculiar pupillary reaction which this case exemplifies Holmes applied the term "the tonic pupil." In 1931 he read a paper at the Ophthalmological Society entitled "Partial Iridoplegia with Symptoms of Other Diseases of the Nervous System." Among fifty-four cases of partial paralysis of the pupil of unknown etiology, which he had observed, some of the tendon jerks were diminished or lost in nineteen. In all, one or both pupils were quite immobile to light. He concluded: "In the present state of our knowledge a separation of those cases in which the tendon jerks are absent from those in which they persist is unjustifiable." Adie analyzed thirteen cases that had come under his personal notice and nine previously recorded in which the tonic pupil was associated with absent tendon jerks. He expressed the view that the tonic pupil when found all alone was a milder form of the same condition. He was the first to apply "benign" to the syndrome, because no further developments ever occurred. It seems that the syndrome is often mistaken for syphilis by those unacquainted with it and Professor Bramwell thinks that in former years he himself must have repeatedly made the mistake. Unlike nervous syphilis, it is much more common in women than in men. It is unknown to most clinicians because it has not received a name. Hence Professor Bramwell's suggested name for it. It does not appear to be very uncommon. It may be unilateral. Incomplete forms are seen in which tonic pupils, iridoplegia, ophthalmoplegia interna or absent knee jerks occur as isolated phenomena.

New Test for Carcinogenic Oil

The Manchester Committee on Cancer reports that a specification for mineral lubricating oils has been drawn up, which should reduce to a minimum the risk of the production of cancer in mule spinners and other workers. Dr. C. C. Twort, director of the Cancer Research Laboratories, describes a new test for assessing the carcinogenic and dermatitic properties of mineral oils, which has the advantage of requiring only seven to ten days to complete. It consists in injecting a few drops of oil into an animal and subsequently recovering the oil for examination. If the oil is toxic, its physical characters will be altered; if nontoxic, they will remain unaltered.

The Institute of Medical Psychology

The Institute of Medical Psychology, which was founded in 1920, has expanded considerably. It has now twenty-two consulting rooms, of which six were recently added, yet functional nervous disorders are so prevalent that it has always a long waiting list of patients. In 1925 the number of attendances of patients was 20,614, an increase of 3,828 over the previous year. The medical staff now amounts to sixty-nine, an increase of

eight, not counting those concerned with physical investigation. Patients with anxiety neurosis predominated and derived much benefit from the community life of the hostel. In the children's department more than 600 attended and much is being learned of the psychology of the neurotic child. An interesting feature is a museum of toys from all over the world. In order to deal more effectively with functional nervous disorders the institute has now acquired a site on which a hospital will be erected with accommodation for 100 beds.

The institute is a center of education in psychologic medicine and has a well equipped laboratory. The training course for physicians as specialists in psychotherapy covers two years. For the advanced investigation of psychopathology by members of the staff a series of study groups has been formed to deal with such conditions as personality types and sex perversions and disorders of childhood, as well as one for social workers and playroom supervisors.

PARIS

(From Our Regular Correspondent)

July 10, 1936.

A Loophole in the Social Insurance Law

The social insurance law in France permits the insured worker to select his own physician. This is not the case in some other European countries. There is a bureau to which employers and employees pay in equal amounts a premium based on the salary and civil status of the employee. When the latter is ill and is cared for by the physician he has selected, the fees of the medical attendant are paid by the patient, who is reimbursed by the bureau through which he is insured. In the May 31 issue of the *Concours médical* is an article by Paul Boudoin, the medicolegal editor, entitled "Can a Physician Oppose Payment of Indemnity to the Insured if the Physician Has Not Been Paid?" In the case which forms the subject of the article, the physician was not paid by the insured worker and hence demanded that the bureau through which the worker was insured should pay for the medical services that had been rendered. The law states that in order that an insured worker should be indemnified for any medical expenses, his certificate of illness must be countersigned by the attending physician. The bureau ignored this requirement and reimbursed the insured, who had not, as stated in the law, previously paid his physician. Boudoin gave as his opinion that as a matter of equity the physician had a right to sue the bureau for the amount of his fee. Unfortunately, the social insurance law contains clauses according to which the attending physician can hold the insured responsible only for medical services and that the local bureau assumes no obligations to pay the physician directly, but in reimbursing the insured it supposes that he will immediately pay the attending physician. The moment that a physician signs the illness certificate of the insured, the bureau has every reason to believe that the physician has been paid. In the case which formed the object of the query, the bureau had reimbursed the insured even though the certificate had not been signed and the attending physician is powerless to collect his fee.

This is a serious loophole in the social insurance law.

Social Insurance Organization Establishes Diagnostic Centers

Some time ago Cibrie, secretary of the principal association to protect medical interests, warned the profession that unless diagnostic centers were established by organized medicine, in association with the social insurance authorities, the latter would do so independently. Cibrie's prediction has been verified and, although a "center of control" already existed in Paris, the caisses or bureaus which receive the premiums from the assured and their employers and, as called on, pay all medical expenses of the assured, have now opened a "diagnostic center" at which radiologic, serologic and other examinations are compulsory in order to receive maternity benefits. Cibrie states that this is only the first invasion of the field of organized medicine and that unless the latter shows itself willing to cooperate with the social insurance authorities they will go ahead heedless of all interference.

Meeting of Biologic Society

At the May 16 meeting of the Société de biologie of Paris, Loeper and Lesure reported that, as the result of their investigations, tyramine and similar substances are to be found in increased quantities in the serum in cases of hypertension. This increase is less absolute than relative in relation to the hypotensive bases, which are derivatives of histamine. It would appear as if, in pathologic cases, an imbalance could occur in the relation of tyramine and histamine, substances that are antagonists.

REFRIGERATION FOR THE CONSERVATION OF VIRUS

Lepine showed that it is of importance, in order to conserve virus of neurotropic type, to use as a substitute refrigeration (to minus 10-20 C.) of emulsions or viscera containing a virulent virus in place of glycerin, which weakens the virus. Even a virus that offers little resistance to glycerin can be conserved by such a refrigeration. To attain its full effect, the refrigerated virus should be kept in as dry a condition as possible and protected from contact with the air. Refrigeration is a simple and efficacious method of conservation of a virus.

EFFECTS OF EPINEPHRINE ON THE CEREBRAL CIRCULATION

The direct microscopic observation of the vessels of the cerebral cortex in dogs was rendered possible for Cachera and Fauvert by utilizing a transparent (glass) vase placed in a trephine opening in such a manner as to exclude the air. They were able to secure a number of photomicrographs which permitted them to measure accurately the caliber of the cerebral vessels and to graph the blood pressure in and volume of the brain. Thus a comparison can be made between the caliber of the cerebral vessels and the level of the blood pressure at the same time. An analysis of the vasomotor reaction of the brain is thus made possible. When epinephrine was administered intravenously or into the carotid, the following results, which confirm recent work of other investigators, were obtained: 1. Dilatation of the cerebral arterioles (plus 10-45 per cent). 2. Slightly increased caliber of the veins (plus 10-20 per cent). 3. Increased volume of the brain. The vascular dilatation is not always immediate; however, no initial vascular constriction was ever observed. This vascular dilatation seems to be passive, closely related to the variations in general blood pressure, but there is no close proportional relation between the dose of epinephrine that had been given and the generalized rise in blood pressure, on the one hand, and the degree of cerebral vascular dilatation on the other. The latter can persist a long while after a drop has occurred in the hypertension due to the epinephrine.

Arteriectomy for Volkmann's Contracture

At the April 1 meeting of the Académie de chirurgie of Paris two cases were reported by Leveuf, one for Salmon, the other for Perrot, in which arteriectomy was performed for the syndrome known as Volkmann's contracture, in both cases following supracondyloid fracture of the humerus. In Salmon's case a boy, aged 14, had been seen on the day after the accident. He was unable to move his hand, and the fingers were flexed. Only slight extension movements were still possible and there was complete anesthesia over the skin areas supplied by the median and ulnar nerves. Immediate operation was contraindicated on account of the presence of bullae on the skin of the forearm. Reduction of the fracture was carried out under

fluoroscopic control. Electrical examination on the seventh day revealed marked diminution in the excitability of the median, ulnar and radial nerves as well as in the muscles of the forearm. At operation, twenty-seven days after the accident, the brachial artery and median nerve at the level of the front of the elbow were found embedded in a mass of scar tissue. Four centimeters of the artery was resected at this level. Examination of the specimen revealed that the lumen of the artery was completely occluded by an organized clot. Following this operation, temporary improvement occurred in the form of better circulation in the hand and less marked flexion deformity of the fingers for forty-eight hours. The boy was not seen again until six weeks later. At this time he could move the fingers better, but the hand was cold. The nerves of the forearm showed a hypo-excitability to electrical stimulation and there was a reaction of degeneration in the muscles of the forearm. No improvement having followed the use of electricity and massage during the next six months, three centimeters of the shafts of the radius and ulna was resected. This was followed by the boy's being able to extend the fingers completely. A year after the accident, all active movements of the wrist and fingers could be executed. Only a slight limitation of extension of the wrist and of flexion of one of the fingers persisted. With the exception of slightly decreased electrical excitability of the extensor muscles, all nerve and muscle reactions are now normal.

In Perrot's case, a boy, aged 2½ years, had sustained a supracondyloid fracture of the humerus with marked displacement of fragments. Reduction was done under fluoroscopic control and a well padded splint applied. Eight days later the hand and forearm were found to be cold and edematous, the radial pulse was imperceptible and the child was unable to move the wrist or fingers. The fracture area was exposed the following day and the brachial artery found embedded in fibrous tissue and raised up by the upper fragment. The median nerve was intact. Three centimeters of the obliterated (thrombosed) artery was resected. Half an hour after the operation the circulation in the hand seemed to be reestablished, and the following day some movement of the fingers was possible. This improvement lasted only forty-eight hours, so that eighteen days after the operation the typical Volkmann deformity of the hand was marked. This condition, associated with anesthesia in the skin area supplied by the ulnar nerve, and marked electrical changes in the muscles of the forearm and thumb were still present three and a half months after the operation. The child was not seen again by Perrot until a year after the accident. At this time the hand appeared normal.

Infantile Acrodynia in France and Other Countries

At the May 5 meeting of the Académie de médecine an exhaustive report was made by Péhu and Boucomont of the distribution all over the world of infantile acrodynia. A complete statistical study is at present impossible because the disease is not always recognized. In addition, the health authorities have as yet not demanded its declaration. In France it is found in all portions but in central France it occurs frequently. This is true also of Belgium, the Netherlands, Great Britain, the northeastern section of Switzerland and southwestern Germany. Few cases have been observed in Austria, Hungary, the Balkan countries, Italy, Spain and Portugal. A striking fact is that it does not seem to occur in the Scandinavian countries. Outside of Europe, one may cite Australia and the United States as reporting a large number of severe cases. The distribution does not seem to follow any geographic or climatic laws. The disease is especially common in small rural communities. The larger centers of population appear to be relatively immune. Acrodynia does not occur in epidemic but rather in sporadic form.

Does Traumatic Lumbago Exist?

The question whether there is a traumatic form of lumbago has been the subject of a suit against an insurance company which was willing to pay an indemnity, if it could be shown that a lumbago could be regarded as an industrial accident. There is so much opportunity for malingering in such a clinical condition as lumbago that insurance companies in France have maintained that the claimant must prove the direct relation between the accident and the lumbar pain complained of.

In 1933, one of the departmental appellate courts held that the effort, even ordinary, which an employee made in carrying out his work can give rise to an injury and that the latter must be considered as an industrial accident. The employer is thus obliged to prove that a given lesion such as a lumbago is not the result of an accident incurred during the performance of ordinary tasks. A well known French medical expert declares that traumatic lumbago is due to a muscular rupture and that the resultant pain would be so severe as to cause the individual to cease work immediately and to be confined to bed for a variable period. Hence, if before the accident there was no interruption of work and if witnesses can affirm that a claimant was obliged to discontinue his task immediately in attempting to immobilize the lumbar region, there was a direct cause and effect relation unless it could be proved by other means that no such accident was possible in the normal course of the duties of the worker.

Hemolytic Familial Icterus

At the May 15 meeting of the Société médicale des hôpitaux of Paris, Debré, Lamy, See and St. Schrameck reported their observations, in nine families, of twenty-five cases of congenital hemolytic icterus. The disease frequently presents a clinical picture which differs from that of the classic descriptions. For example, several of the patients had only a subicteric hue of temporary character and only after considerable questioning could the patient remember having been slightly jaundiced. Some have never been icteric or subicteric. This was true of five of the twenty-five cases. The anemia, although more constantly observed than the icterus, may also be absent. Most frequently the red blood count is between 3,500,000 and 4,000,000. Only once was a red blood count less than 3,000,000. Splenomegaly was found in all the twenty-five cases.

These variations illustrate the polymorphism of a disease which at times presents as the chief sign a splenomegaly, at others a chronic icterus and finally a splenic anemia. The "formes frustes," recognized only after a systematic research into the family history, as a result of finding a moderately enlarged spleen, are certainly frequent. Several such cases have been discovered in nurslings and older children.

Certain hemolytic stigmas do not have the importance that is usually ascribed to them. This is especially true of the decreased resistance of the red blood cells toward hypotonic solutions. This finding is often lacking. On the other hand, an increased bilirubin content of the blood can be regarded as the most accurate index of the hyperhemolysis. The latter is usually accompanied by evidence of a compensatory hyperactivity of the bone marrow in the form of an increased number of reticulocytes, as the myelograms (obtained by puncture of the sternum) reveal. The evolution of the "hemolytic disease" is often interrupted by acute attacks of biliary colic and of deglobulization. The latter are especially to be dreaded. The authors observed this complication in four children, seldom in adults. These acute attacks of deglobulization present the following clinical picture: high temperature, tachycardia, splenomegaly with or without hepatomegaly, rapid deglobulization so that the number of red blood cells reaches the low figure of a million, marked pallor and a soft systolic murmur over the heart area. As a rule the attack lasts only from twelve to fifteen days. At times the attacks assume a subacute character.

Other complications observed by the authors are cardiac insufficiency, corneal infiltrations and disturbances in development; i. e., in weight and height.

On account of its polymorphism, the disease often remains unrecognized unless a careful inquiry is made as to similar cases in the family of the patient. Many acute hemolytic anemias, splenic anemias of the Banti type and supposedly acquired hemolytic anemias are in reality cases of the "familial hemolytic disease," according to the authors. The disease is constitutional and familial, being transmitted in accordance with the mendelian laws, and it bears no relation to syphilis. The only treatment is splenectomy, and this should be done even in children.

In the discussion, Noel Fiessinger stated that one can find in the family of such patients a splenomegaly without icterus and without anemia. It is the splenomegaly which is hereditary; hence he would suggest calling the disease "familial hemolytic splenomegaly" instead of "congenital hemolytic icterus."

Chabrol endorsed the view that the essential feature is the splenomegaly. The globular fragility is a secondary factor. Certain patients can live for years and the condition be diagnosed as acquired hemolytic icterus, the real diagnosis "congenital icterus" never being suspected. Splenectomy is indicated if the anemia is progressive and also if there are recurrent attacks of severe right upper quadrant (biliary colic) pain.

New Fellows of Académie de Chirurgie

The following have been honored by election as fellows of the Académie de chirurgie: Professor d'Arsonal of the Collège de France; Leclainche, vice president of the Académie des sciences; the roentgenologist Antoine Béclère, and Claude Regaud, professor at the Institut Pasteur.

BERLIN

(From Our Regular Correspondent)

June 29, 1936.

Joint Congress of "the New German Medicine" and Internal Medicine

At the end of April the joint congress of the National Cooperative Association for New German Medicine and the German Society of Internal Medicine took place as scheduled at Wiesbaden, a city which the internists for decades have made their gathering place. This joint congress had been looked forward to as of great historical significance, especially since the national führer of medicine, Dr. Wagner, had asserted that in future every German physician should resort to tested and approved Nature Cure procedures as readily as to any other therapeutic or prophylactic measure. Wagner has also stated, however, that "we do not blink the fact that when entrusted to the ignorant and the unskilled the mighty forces of nature may conceivably work as great a mischief as would the incorrect prescription of a medicament, for example." As a result the attendance at this congress was unusually large, all medical and political ranks of National Socialism in any way concerned being represented. When the internists and the Nature Cure men met in joint session, on the third day, the attendance was estimated at 2,000 persons, an almost unprecedented figure. But, as a leading German medical weekly regretfully notes, many of the older professors who are usually most regular in their attendance, men who might be called the guiding spirits of past congresses at Wiesbaden, were absent. Professor Schwenkenbecher of Marburg presided over the internists, while the National Cooperative Association had as its chairman Professor Kötschau of Jena, head of the Biologic Policlinic and a former pupil of Professor His at the University Clinic in Berlin.

The contrasting opinions to be reconciled at Wiesbaden were various and sundry. As the *Deutsche Aerzteblatt* expresses it, the chief differences discussed were those existing between physician and public, between academic medicine and the biologic movement, between specialized science and knowledges and doctrine intuitively arrived at. This congress served to elucidate many strange things.

On the first two days the Reichsarbeitsgemeinschaft held sessions. Presiding officer Kötschau stressed first of all that the organization, far from being a rallying point of irregular medicine, is just as dependent on scientific medicine as so-called academic medicine, despite the fact that the new medicine includes therapeutic methods that have for centuries enjoyed wide usage among the people and are of proved worth. The views of many among the internists and the views of the Nature Cure physicians were in many respects similar. The permeation of the entire medical profession with the ideology of a biologic medicine has been made necessary by political expediency. Under the circumstances the congress should be purely informative in character; its objective should be to acquaint the medical profession as a whole with the new doctrines. A free interchange of ideas can lead to symbiosis and synthesis and ultimately to a unified new German medicine. Three years of National Socialistic government has already made possible the removal of a whole mass of prejudice, and the dawn of a new era in German medical science has been recognized. The way now lies open for the composition of all differences.

As might have been expected, the papers expressed for the most part the views of the exponents of "Biologic Therapy" and were supposed to supply scientific bases and substance to therapeutic methods that owe their practical success largely to empiricism. One author, for example, sought to illustrate the relation of paracelsian doctrine to the German medicine; Paracelsus, he said, considered all medical activity as rooted in the folk and in the soil. The Jena anatomist Professor Boker explained in a paper on "Morphologic Bases of the Biologic Theory of Medicine" that academic and biologic medicine differ not so much with regard to the therapeutic methods employed by practitioners, but more radically with regard to basic theoretical concepts. The difference might be epitomized as the opposition of Mechanism to "Holism" (entirety, a synthesis of mechanistic and vitalistic elements), of causal analysis to causal synthesis, of passive-technical events to active animated reactions. Academic medicine is based on the chemicophysical or mechanistic theory; the new movement, while not akin to an extreme vitalism, may lead to a superordinated Holism, which would reckon vital phenomena as active processes closely bound to passive processes.

Among other communications by adherents of this movement, that of G. Wegener should be mentioned. Wegener is director of the National Federation of Societies for Life and Therapeutic Methods in conformity with Nature and is not a physician. He spoke, of course, in behalf of the popular medicine movement and asserted that Nature Medicine had been misunderstood—on the one hand by presumptuous persons who had not wished to believe that nature can heal (?) and on the other by "those charlatans and false prophets who would hawk their Nature Medicine as if it were merchandise at a fair." One seems always to forget "the souls of German men," which "possess a lighter and finer sensitivity perhaps than those of any other people on earth." "German man, in his unspoiled naturalness, experiences an emotional element in healing, a feeling that the hand of a true physician and a pair of soulful eyes from which shine forth a noble spirit are of greater worth than a plenitude of physical and chemical apparatus." The foregoing are excerpts from the learned address of the "Director of the entire German Popular-Healing Movement" delivered at a medical convention held under the special protectorate of the national führer of medicine. Further quotations from the

same speech exemplify even more graphically the implications of the philosophy of the new school. "It is inimical to the cooperation between doctor and people that the tiny microscopic lamp should so often be confounded with the mighty Sun; . . . the objectives of the Popular-Healing Movement are these: to instruct in matters of health and hygiene, to point out the paths to be followed and to disseminate necessary knowledge so that self help and the organism's defense mechanism can be supplemented and first aid measures carried out before the arrival of a physician. The physician and the recognized healing practitioner both stand ready to treat and to cure disease."

Additional speeches bore the imprint of the same train of thought. One doctor set forth a new type of hospital procedure: the patient should be repeatedly advised and persuaded that he shall quit the hospital both internally and externally restored to health; such a suggestion may help to bring about a "constitutional alteration." Another speaker believed that since the weltanschauung and leading practical principles of New German Medicine must parallel the development of National Socialism, popular medical orators should receive special training in schools of elocution. Thousands of physicians would thus find promising fields of activity as medical instructors in hygiene and as führers of the various Nature, Kneippian and Reformed organizations.

There were in addition the expected papers on the integration of homeopathy with New German Medicine and on the value of medicinal herbs. Here at last were topics amenable to being discussed by scientifically trained physicians. None of these papers, however, presented anything fundamentally new. More specific problems were next discussed. Dr. Bottenberg of Frankfort-on-Main, already well known for his publications in the field of "biologic therapy" and more of a critic than many others, took this opportunity to point out that the unrestricted use of sweatings, venesections, blood leeches and so on must needs have a deleterious effect on the patient. This warning indicates how widespread the use of these methods, many of them snatched from oblivion, has become in present-day Germany. Further papers dealt with questions of psychic import in the well known manner.

A paper on the function of biologic dentistry told of a startling increase in dental and maxillary disturbances as disclosed by group examinations among the Hitler youth and other young people's organizations. Here the problem is to overcome the predisposition to caries and parodontitis. There followed discussions of several clinical topics such as bronchial asthma, rheumatism, passive aortic gymnastics, physical exercise and radon emanation treatment.

The third day of the gathering was given over to the joint session with the internists. In an introductory address Professor Schwenkenbecher of Marburg delineated tactfully the tasks confronting the joint assembly and recognized the reichsarbeitsgemeinschaft as a scientific body. He pointed out that turning away from the exclusively natural scientific concept is for the understanding of the vital processes tantamount to a rejection of purely materialistic philosophy; such a trend has suddenly received new significance since the National Socialist revolution. Physicians of the so-called academic medicine are many times lacking in first hand knowledge and ability to apply physical methods. Fundamental differences exist particularly with regard to dietetics; the abundance and variety of dietary methods, most of which are carefully tested and which strive to adapt themselves to the individual case, form quite a contrast to the only slightly varying raw vegetable diet of Nature Cure Medicine. The work of the association must not be restricted to speeches and debates; there must be mutual clinical activity, thoroughgoing mutual examination of methods and mutual acquaintance with the other fellow's way of thinking. Even when these things are obtained it will still be difficult to determine whether or not a course of treatment will produce the desired result. The most diverse results are possible, owing to idiosyncrasies of the patient selected for a test, to differences in experimental methods themselves and to the method used to evaluate the results. Medical tradition, moreover, hinders a proper evaluation. Cooperation ought not, however, to lead to a hasty superficial equalization of the differing anschauungen and methods. Precisely in differentiation are to be found those forces which are indispensable for mutual stimulations and reciprocally fruitful contacts.

In contrast to the prudent formulations of Schwenkenbecher was a forceful, aggressive speech by Professor Kötschau on "The Place of Preventive and Other Treatment in New German Medicine." The acceptation of a scientific principle is justified only after its practical utility has been authenticated. On a basis of this essential utility, history delivers its verdict. This justification of a scientific principle may well depend on how deeply it is rooted among the people. "We of today realize," said Kötschau, "that the dream of an absolute, suppositious, objective natural science and medical science has been dreamed out." The younger medical men, he continued, are turning from the misuse of exact natural science in biology and in medicine. Contemporary scientific medicine is by no means to be rejected, but, on the other hand, the scientist must guard against a priori rejections of methods and ideas which are alien to his accustomed train of thought. One of the most important of all therapeutic procedures is, from the standpoint of the strictly scientific school, incomprehensible and inexplicable: the process of natural healing. Both health and disease are to be understood as manifestations of the hidden, ever active healing forces of nature. By prophylaxis, that is, activity in conformity with nature, the need for therapeutic measures should be less frequent, for treatment is usually first instituted when a disturbance is already manifest. New German medicine is simple, self comprehensible and natural; it can never become alien to the people (this last is a reproach, which has been directed at academic medicine by adherents of the new doctrine with increasing frequency).

A middle position between the points of view of these two chairmen was taken by the national führer of medicine, Dr. Wagner, the man responsible for the holding of this joint assembly.

The more interesting portions of his discourse are paraphrased: It is desirable that in future a difference between "biologic" and academic physicians shall no longer be recognized. The ideal for which all should strive is that of the general, trained family doctor, the German people's physician whose principal concern is the actual needs of his fellow countrymen! When the confidence of those fellow citizens is again won, then we shall approach a problem the solution of which is an imperative necessity, that of unrestricted therapeutic activity. All men concerned are agreed on one point, that the present unrestricted therapeutic activity is incompatible with the anschauung and requirements of National Socialism. Accordingly this too great freedom with regard to healing must be ended as soon as possible. This also represents the wish of the healer himself, and certain concessions must in the future be made for a selected group of these practitioners (who might more accurately be termed quacks, since they are certainly not physicians and have had no regular course of training).

This talk of a finally imminent suppression of the independent healer or quack whose pernicious doings have been reported more and more frequently in recent years was Wagner's reciprocal gesture of gratitude for the recognition of the Nature Cure physicians by scientific medicine through the latter's most representative German group, the Society of Internal Medicine. The internists were fully aware of this fact.

Of like interest were the remarks of the deputy to the führer of medicine, Dr. Blome, who, speaking on postgraduate medical studies, attempted to give both academic and Nature Medicine their due. It is unfitting, he declared, that certain cliques should make it their business to decide onesidedly what direction medicine should follow. How frequently it happens that specialists who consider themselves authorities in their proper fields and perhaps are so in fact may be virtually ignorant of what their colleagues in other fields are doing. Continued Blome, "There is no denying that there exists today an exaggerated specialism which the average German rejects instinctively as foreign to his nature. American methods and anschauungen certainly must not prevail in Germany. This inability to think in any other terms but those of organs and systems of organs frequently causes the specialist to become narrow, short sighted and, as a consequence, intolerant of others." The important function of pure science should be fully appreciated but the direction of sanitary affairs is the duty not of the scientist but of the National Socialist movement, of the party. It is of paramount importance that the family physician whose general training is excellent be restored to the people and that cliques of mediocre specialists, such as exist today, be put out of commission. The extremists of both groups, the recalcitrant dogmatic academicians together with the nature cure monomaniacs, shall be left out of the picture. Nor must any one think for a minute that Nature Cure Medicine is presuming to dictate to academic medicine. A synthesis of the two schools must be accomplished. The foregoing explanations are of particular significance, falling as they do from the lips of one who controls compulsory postgraduate study throughout Germany.

The Berlin internist Professor Siebeck next spoke on the treatment of cardiac insufficiency.

Finally, the two assembled bodies passed a joint resolution which requested that a strictly scientific but unbiased investigation and further development be made of all natural therapeutic procedures which seem to promise favorable results. The joint session was forthwith adjourned. Subsequently the internists alone held a further session. Taken all in all, the joint assembly occasioned the expression of many opinions which are of interest even for those of us who cannot subscribe thereto and, in any case, it permitted a good glimpse of the road that German medical science of today is perforce traveling.

BELGIUM

(From Our Regular Correspondent)

May 25, 1936.

Can Incorrigibility be Determined in a Criminal?

Dr. Vervaecke, who has studied the problem whether or not incorrigibility can be determined in a criminal, questions the efficacy of the classic methods of treating criminals. He doubts whether these procedures exercise any appreciable influence on the subjects. The better to inform himself on the question, the author made use of some Belgian statistics on recidivism. In the year 1924, out of 91,597 offenders sentenced, 17,299 were recidivists, more than half of whom had repeated the same type of offense which had brought about the previous convictions. Two divergent views are taken of recidivism. Jurists and prison officials generally hold the imperfect character of the penal system at fault, while medical men look on the recidivist as a victim of biologic predispositions. Vervaecke, after thirty years' experience, favors the second point of view; he recognizes not only the influence of predispositions but that of the circumstances as well as having caused the misdeed. Morbid predispositions are frequently observed in recidivists; of the group studied, only 3 per cent possessed more than average intelligence and these had been convicted of frauds and confidence games.

There are no certain indications for prognosis of incorrigibility. Most significant from the author's point of view are the number of offenses committed, repetition of an offense after a short lapse of time, the culprit's reaction on learning what is to be his punishment, and so on. Anthropologic examinations yield interesting indications but no certain diagnostic method. Neither the large number nor the gravity of the indications leads to a pessimistic conclusion. A change for better or for worse may intervene, caused by changing qualities within the criminal and by that which Vervaecke calls "slackened psychologic development," that is, age, emotivity, and sequels of contagious diseases such as typhoid and encephalitis, all factors capable of offering a certain resistance to his inclination.

The foregoing statement suggests that recidivists are frequently afflicted with biologic anomalies. The author quotes statistics from the Merxplas asylum, an institution especially designed for the care of recidivists in Belgium, in which 90 per cent of the inmates presented physical abnormalities or were afflicted with psychopathic, moral and emotional defects. None of these defects, however, can lead to a determination of definitive incorrigibility.

Investigation of the Etiology of Epilepsy

Mr. Laruelle discussed before the Medicosurgical Society of Brabant an investigation of 375 cases of epilepsy which had led him to conclude that no essential difference exists between general epilepsy and partial epilepsy. Of 375 patients, most of whom had been listed as presenting essential epilepsy, Laruelle was able to establish the etiology in 62 per cent. In the first rank, one finds a notable proportion of heredo-alcoholic persons (13 per cent). The alcoholism was established in three generations. The second most important etiologic factor was cranial, including obstetric, trauma. The relation of the traumatism to the epilepsy is often most difficult to establish; modifications in the form of the ventricles at certain points are here of great value, particularly cicatricial retractions secondary to arachnitis. Heredo-epilepsy was determined in a number of cases. In other cases the disease arises in heredosyphilis. Infantile eclampsia, however, must not be placed on a level with epilepsy. Eclampsia is due in part to cerebral conditions, since at that particular epoch the brain is not held in check like that of an adult. Cerebral tumors are responsible for convulsive reactions appearing in 20 per cent of the cases. Humoral examinations conducted by Laruelle failed to show any constant metabolic variation in epilepsy. On the other hand, great instability of the humoral equilibrium was encountered, attributable perhaps in addition to the irritability of the cortex to an alteration in the region of the floor of the third ventricle or median diencephalon. Epilepsy and migraine present many common characters, cerebral angiospasm and allergic factors, for example. Since epilepsy is so prevalent (more than one case for each 400 persons) a thorough etiologic investigation should be undertaken in each instance. This may lead to a therapy based on causal factors. If need be, one should even resort to surgical exploration.

Antidiphtheritic Immunity in the Congo

It is generally conceded that diphtheria is nonexistent in the Belgian Congo. Van Slyke, however, has called the attention of the Belgian Society of Tropical Medicine to his investigations among natives from the region of the rivers Lomami and Kassai. When the Schick reaction test was given to forty-four healthy adults, 56.8 per cent of the subjects showed a negative reaction,—evidence of an anterior immunization. Accordingly, an attenuated type of diphtheric infection would seem to be present among the aborigines of the Belgian Congo, so mild as ordinarily to pass unnoticed but leaving its imprint on the person.

Marriages

RICHARD B. GREENE, Philadelphia, to DR. LUCILLE ELISE TUCKER of Reading, Pa., in New York, June 24.

JOHN PHILIP GRAHAM, Galesburg, Ill., to Miss Eleanor Hegy of San Jose, Calif., in New York, June 13.

LAWRENCE BREITBART, Flushing, N. Y., to DR. SARA YAMPOLSKY of Edmonton, Alta., Canada, July 1.

JACKSON T. RAMSAUR, Cherryville, N. C., to Miss Lucile Byrd Draughon of Durham, May 30.

LINWOOD MALONE GABLE to Miss Martha S. Bidaman, both of St. Petersburg, Fla., June 27.

NORMAN O. SPIKES, Durham, N. C., to Miss Vera B. Baldwin of Atlanta, May 4.

RICHARD GLENN HAHN to Miss Margaret Miller Landes, both of Bath, Pa., July 15.

HUBERT E. BONEBRAKE to Miss Mildred Reinhart, both of Portland, Ore., June 3.

MORRIS W. GREENBERG to Miss Sarah Freedman, both of Brooklyn, recently.

BERNARD A. KAMM to Miss Mary Dailey, both of South Bend, Ind., May 25.

Deaths

Daniel S. Dougherty ⊕ New York; University of the City of New York Medical Department, 1884; member of the House of Delegates of the American Medical Association from 1927 to 1928, from 1930 to 1932 and in 1935; since 1916 secretary and since 1929 director of activities of the Medical Society of the County of New York; secretary of the Medical Society of the State of New York since 1925, and at the recent annual session of the society made secretary emeritus; for many years professor of otology at the New York Polyclinic Medical School and Hospital; formerly secretary of the New York Academy of Medicine; member of the American Laryngological, Rhinological and Otological Society; fellow of the American College of Surgeons; attending otologist to the New York Polyclinic Medical School and Hospital; consulting otolaryngologist to the City, People's Midtown, West Side, and Jewish Memorial hospitals, New York, Nyack (N. Y.) Hospital and the Long Beach (N. Y.) Hospital; aged 75; died suddenly, August 4, at his summer home in Nanuet, N. Y.

Harry **Osgood Spalding,** Hingham, Mass.; Boston University School of Medicine, 1897; member of the Massachusetts Medical Society, the American Psychiatric Association and the New England Society of Psychiatry; assistant in materia medica from 1900 to 1904, and instructor and associate professor of clinical psychiatry at his alma mater from 1912 to 1919; assistant superintendent of the Norwich (Conn.) State Hospital from 1904 to 1912; formerly superintendent of the Westboro (Mass.) State Hospital and the Wiswall Sanatorium, Wellesley; aged 65; died, May 10, in the Massachusetts Memorial Hospital, Boston, following an operation for adenoma of the prostate.

Herschel Porter Hamilton ⊕ Omaha; University of Louisville (Ky.) Medical Department, 1887; fellow of the American College of Surgeons; formerly professor of principles and practice of surgery and clinical surgery at the John A. Creighton Medical College; chief of staff emeritus, Evangelical Covenant Hospital; aged 76; died, May 28, of angina pectoris and coronary sclerosis.

Alberta Sylvia Boomhower Guibord ⊕ Newton, Mass.; Boston University School of Medicine, 1899; member of the American Psychiatric Association and the New England Society of Psychiatry; at one time instructor in psychotherapeutics at her alma mater; psychiatrist in charge of the School Clinic, Boston State Hospital and consultant to the New England Hospital for Women and Children; aged 62; died, May 27, of lobar pneumonia.

Walter Byrd Pollard ⊕ Winton, N. C.; University of Pennsylvania Department of Medicine, Philadelphia, 1899; past president and secretary of the Hertford County Medical Society; county health officer; member of the medical examining board during the World War and volunteered for medical service overseas; aged 61; died, May 16, of chronic myocarditis and mitral regurgitation.

Stewart McKee, Leavenworth, Kan.; College of Physicians and Surgeons, Keokuk, Iowa, 1895; member of the Kansas Medical Society; past president of the city board of education; at one time city and county physician; formerly on the staff of the U. S. Penitentiary Hospital; aged 75; died, May 5, in St. John's Hospital, of an infection following a prostatectomy.

Seth Bachman Kistler, Nanticoke, Pa.; Hahnemann Medical College and Hospital of Philadelphia, 1928; member of the Medical Society of the State of Pennsylvania; on the staff of the Wyoming Valley Homeopathic Hospital, Wilkes-Barre; aged 31; died, May 15, in the Hahnemann Hospital, Philadelphia, of gastro-intestinal hemorrhage.

J. Carl Schmuck, Lawrence, N. Y.; University of the City of New York Medical Department, 1882; for many years bank president and health officer of Lawrence; formerly on the staffs of the Nassau Hospital, Mineola, and St. Joseph's Hospital, Far Rockaway; aged 77; died, May 21, in Atlantic Beach, of diabetes mellitus and coronary thrombosis.

Lester Graham Miller, New Orleans; University of Tennessee College of Medicine, Memphis, 1917; acting assistant surgeon U. S. Public Health Service, connected with the U. S. Quarantine Station of Algiers; aged 46; was killed, May 26, when he fell into the river as he was preparing to leave a steamer.

Hiram Holden, Trenton, Mich.; Michigan College of Medicine, Detroit, 1883; Bellevue Hospital Medical College, New York, 1890; at one time a druggist; formerly village president and president of the board of education; aged 80; died, May 23, in the University Hospital, Ann Arbor, of bronchopneumonia.

Foster Reed Winn ⊕ Alvin, Texas; Marion-Sims College of Medicine, St. Louis, 1896; past president of the Brazoria County Medical Society; veteran of the Spanish-American and World wars; for many years president of the school board; aged 66; died, May 5, in St. Mary's Infirmary, Galveston.

Charles Sidney Tate, Ramseur, N. C.; Baltimore Medical College, 1893; member of the Medical Society of the State of North Carolina; president of the Randolph County Medical Society; formerly county coroner, member of the local school board and county board of health; aged 72; died, May 25.

Thomas Scudder Winslow, New York; Columbia University College of Physicians and Surgeons, New York, 1913; member of the Medical Society of the State of New York; served during the World War; aged 52; director of the clinical laboratory of the Roosevelt Hospital, where he died, May 28.

Richard Hayes Meagher, New York; Cornell University Medical College, New York, 1927; assistant professor of surgery at his alma mater; member of the American Psychiatric Association; assistant attending surgeon (neurosurgery), New York Hospital; aged 37; died, May 27, of heart disease.

Carl George Zeidler, Belleville, Mich.; Michigan College of Medicine and Surgery, Detroit, 1905; also a minister; formerly president of the village of Belleville, justice of the peace and health officer; aged 66; died, May 24, in St. Joseph's Mercy Hospital, Ann Arbor, of bronchopneumonia.

John Pope Stewart, Attalla, Ala.; Medical College of Alabama, Mobile, 1885; member and life councilor of the Medical Association of the State of Alabama; past president of the Etowah County Medical Society; formerly mayor of Attalla; aged 77; died, May 18, of myocarditis.

Willmert Paul Laue, Santa Monica, Calif.; Saginaw (Mich.) Valley Medical College, 1903; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1908; at one time a practitioner in Gary and South Bend, Ind.; aged 58; died, May 2.

Lee Monte Sankey, Jeannette, Pa.; Cleveland Homeopathic Medical College, 1908; fellow of the American College of Surgeons; served during the World War; member of the surgical staff of the Westmoreland Hospital, Greensburg; aged 54; died, May 14, of coronary thrombosis.

Robert McWilliam O'Neal, Santa Monica, Calif.; College of Physicians and Surgeons of San Francisco, 1904; served during the World War; aged 56; on the staff of the Santa Monica Hospital, where he died, May 1, of carcinoma of the bladder with metastases.

John Joslyn Kelley, Burr Oak, Mich.; Hahnemann Medical College and Hospital, Chicago, 1900; served during the World War; for many years member of the board of education; aged 60; on the staff of the Sturgis (Mich.) Memorial Hospital, where he died, May 22.

John Montgomery Randolph ⊕ Rahway, N. J.; University of the City of New York Medical Department, 1888; member of the board of education; for many years on the staff of the Memorial Hospital; aged 69; died, May 17, of cerebral thrombosis.

John W. Sosbee, Stroud, Okla.; College of Physicians and Surgeons, Dallas, 1904; member of the Oklahoma State Medical Association; past president of the Lincoln County Medical Society; aged 59; died suddenly, May 21, of coronary thrombosis.

Samuel Dwyer Henry ⊕ Excelsior Springs, Mo.; Kansas City (Mo.) Homeopathic Medical College, 1894; past president of the Clay County Medical Society; on the staff of the Excelsior Springs Sanitarium and Hospital; aged 76; died, May 23.

Emanuel F. Snydacker ⊕ Chicago, College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1898; aged 65; formerly on the staff of the Michael Reese Hospital, where he died, May 8, of coronary thrombosis.

John Frederick Pritchard, Manitowoc, Wis.; Rush Medical College, Chicago, 1871; member of the State Medical Society of Wisconsin; for many years member of the school board; aged 89; died, May 17, in the Holy Family Hospital, of senility.

Samuel Engle Lee ⊕ Greenville, S. C.; University of Maryland School of Medicine, Baltimore, 1911; formerly superintendent of the Greenville County Sanatorium; aged 56; died, May 17, in Mountain Lake Park, Md., of coronary thrombosis.

Kristian Henrik Egede Nissen, Minneapolis; Kongelige Frederiks Universitets Medisinske Fakultet, Oslo, Norway, 1888; formerly member of the state board of health; aged 72; died, May 7, of congestive heart disease and arteriosclerosis.

William Ebenezer Waugh, London, Ont., Canada; McGill University Faculty of Medicine, Montreal, Que., 1872; bursar and for many years a member of the teaching staff of the University of Western Ontario; aged 85; died, May 25.

Sidney Addison Sumby, Saginaw, Mich.; Howard University College of Medicine, Washington, D. C., 1930; member of the Michigan State Medical Society; aged 30; died, May 11, in the Saginaw General Hospital, of pneumonia.

James Marcus McDavid, Memphis, Tenn.; Kansas City College of Medicine and Surgery, 1919; at one time health officer of West Helena, Ark., and coroner of West Memphis; aged 49; died, May 10, of pneumonia.

Francis W. Willard, Chicago; Marion-Sims College of Medicine, St. Louis, 1891; also a dentist; aged 70; died, May 14, in the Frances E. Willard Hospital, of diabetes mellitus and acute dilatation of the heart.

Thomas Richard Stack, Cleveland; Cleveland College of Physicians and Surgeons, Medical Department of the University of Wooster, 1888; at one time county physician; aged 67; died, May 8, of cerebral hemorrhage.

Edward Louis Schreiber, Milwaukee; Wisconsin College of Physicians and Surgeons, Milwaukee, 1904; on the staff of the Wisconsin General Hospital; aged 57; died, May 14, of a skull fracture received in a fall.

John Joseph Healey, Providence, R. I.; Harvard University Medical School, Boston, 1909; served during the World War; aged 53; died, May 4, of hypertension, chronic nephritis and cerebral hemorrhage.

Armand J. Prudhomme ⊕ Cleveland; Medical Department of Ohio Wesleyan University, Cleveland, 1905; on the staff of the Lutheran Hospital; aged 53; died, May 19, of gastric carcinoma and myocarditis.

James Gilbert Howell, Enville, Tenn. (licensed in Tennessee in 1910); member of the Tennessee State Medical Association; aged 57; died, May 7, in a hospital at Jackson, of chronic arthritis and pneumonia.

Lambert C. Brewer, Los Angeles; Atlanta College of Physicians and Surgeons, 1901; member of the California Medical Association; aged 59; died, May 10, in a local hospital of pulmonary tuberculosis.

David A. Williams, Niangua, Mo.; Missouri Medical College, St. Louis, 1882; member of the Missouri State Medical Association; for many years bank president; aged 81; died, May 9, of pneumonia.

John W. Howard, Oklahoma City; Kentucky School of Medicine, Louisville, 1876; member of the senate in the first territorial legislature; aged 87; died, May 10, of cardiorenal vascular disease.

Lewis Carl Cook, Columbia, Miss.; Memphis (Tenn.) Hospital Medical College, 1911; member of the Mississippi State Medical Association; aged 60; died, in May, of acute dilatation of the heart.

Alfred McKinnon Curl, Quincy, Ohio; Jefferson Medical College of Philadelphia, 1891; member of the Ohio State Medical Association; served during the World War; aged 69; died, May 10.

Joseph Browne Jackson, Zanesville, Ohio; Howard University College of Medicine, Washington, D. C., 1925; served during the World War; aged 40; died, May 13, of heart disease.

Robert Leeper Doig, San Diego, Calif.; College of Physicians and Surgeons, Keokuk, Iowa, 1880; member of the California Medical Association; aged 81; died, May 9, of heart disease.

Samuel John Will, Jefferson Barracks, Mo.; Missouri Medical College, St. Louis, 1880; member of the Missouri State Medical Association; aged 77; died, May 18, of arteriosclerosis.

Frank M. Solar ⊕ Cincinnati; Medical College of Ohio, Cincinnati, 1890; on the staff of St. Francis Hospital; aged 67; died, May 22, of hemorrhage due to an intra-abdominal tumor.

Henry George Meyer, Chicago; Hering Medical College, Chicago, 1906; member of the Illinois State Medical Society; aged 66; died, May 8, of cardiac decompensation and nephritis.

John Driver, Ogden, Utah; Marion-Sims College of Medicine, St. Louis, 1891; honorary president of the Utah State Medical Association; aged 87; died, May 8, of myocarditis.

William Henry Flint, Perry, Mich.; Detroit College of Medicine, 1897; formerly a minister; aged 77; died, May 4, in a hospital at Lansing of carcinoma of the bladder.

Lovick Thomas Pattillo, Atlanta, Ga.; Atlanta College of Physicians and Surgeons, 1904; formerly state bacteriologist; aged 60; died, May 12, of carcinoma of the larynx.

Frank J. Livingston, Salix, Pa.; Eclectic Medical Institute, Cincinnati, 1888; bank president; formerly county coroner; aged 67; died, May 5, of cerebral hemorrhage.

Tobe E. Dalton, Opp, Ala.; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1894; aged 69; died suddenly, May 4, of heart disease.

Calvin S. Branyon, Valdosta, Ga.; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1892; aged 76; died, May 3, of myocarditis.

Andrew B. Estock, Eugene, Ore.; Dunham Medical College, Chicago, 1901; aged 65; died, May 19, following an operation on the prostate.

Orland L. Cook ⊕ Pittsburgh; University of Louisville (Ky.) Medical Department, 1911; aged 55; died, May 5, of cerebral hemorrhage.

West B. Bailey, White Plains, Ky.; Kentucky School of Medicine, Louisville, 1891; aged 75; died, May 8, of cardiovascular renal disease.

James McKissick Moore, Spring Hill, Tenn.; University of Nashville Medical Department, 1875; aged 87; died, April 18, of senility.

Bert P. McWhinney, Indianapolis; Eclectic Medical Institute, Cincinnati, 1897; aged 67; died, April 14, of cardiovascular renal disease.

Michael J. Flanagan, Shamokin, Pa.; Jefferson Medical College of Philadelphia, 1890; aged 68; died, May 16, of chronic myocarditis.

Charles M. Steward, Kansas City, Mo.; Eclectic Medical University, Kansas City, 1913; aged 58; died, April 23, of heart disease.

Peter Douglas McLean, Woodbridge, Ont., Canada; University of Toronto Faculty of Medicine, 1879; aged 79; died, April 5.

Sylverter Summerfield Thomas, Maben, Miss.; Louisville (Ky.) Medical College, 1889; aged 70; died, April 24, of pneumonia.

Jessie Thomas Orr, Olathe, Kan.; Woman's Medical College, Chicago, 1886; aged 72; died, May 4, of carcinoma of the liver.

Benjamin F. Herring, House, N.M. (licensed in New Mexico in 1905); aged 77; died, May 5, of cerebral hemorrhage.

James McDougle, Humboldt, Ill.; Rush Medical College, Chicago, 1877; aged 83; died, May 13, of cerebral hemorrhage.

C. P. Capps, Meherrin, Va.; University College of Medicine, Richmond, 1895; aged 68; died, May 12, of cerebral hemorrhage.

Alexander L. Davidonis, Chicago; Chicago Medical School, 1922; aged 46; died, May 21, of coronary thrombosis.

L. R. McClain, Cookeville, Tenn. (licensed in Tennessee in 1889); aged 91; died, in April, of senility.

Bureau of Investigation

THE "GLYOXYLIDE" OF WILLIAM F. KOCH

New Steps in the Evaluation of the Detroit Cancer Cure

On April 6, 1936, the Bureau of Investigation received from an Alabama physician what was to be the first of numerous inquiries regarding William F. Koch and his "Glyoxylide." The inquirers had received an advertisement consisting of a one-page printed letter bearing the heading "Koch Laboratories" and carrying the names of William F. Koch, Ph.D., M.D., and G. J. Warnshuis, M.D.

The body of the letter was devoted to what the signatory, Koch, was pleased to term "the most important recent achievement in medicine . . ." The name of this "recent achievement" was "Glyoxylide." The promulgators claimed they had "demonstrated its efficiency not only in the treatment of cancer, but also in such infections as tuberculosis, psoriasis, leprosy, poliomyelitis and syphilis."

Koch sends with his letter a four-page leaflet. The leaflet contains several remarkable photographic reproductions of the "before-and-after" type entitled "Examples of Efficiency of Natural General Immunity Body Synthetically Reproduced."

The first page of the leaflet depicts two photographs. One above the title "4 years of intense suffering with Psoriasis," shows a man covered with skin lesions. The other is entitled "Recovery after 2 Injections of Glyoxylide." No other explanation is offered. The time interval between injections is not mentioned, although in the recovery picture several inches have apparently been added to the patient's girth.

The second page of the leaflet contains, under the caption "Cancer of Stomach," two photographs of "Mr. R." The upper picture carries the legend "Mr. R. before treatment. Note the bulging of the cancer masses throughout the abdomen." A picture similar in all details of shadows and highlights appears on page 38 of the book "Natural Immunity" published by Koch. To this picture is appended the legend "Mr. R. after recovery. Abdomen completely normal. All traces of cancer masses have been absorbed." Below the picture of "Mr. R." in the leaflet and in the book is another picture of "Mr. R," with the legend "Mr. R. abdomen drawn in to show the freedom from cancer masses." A careful comparison of these four pictures shows identical folding of the patient's shirt. It is difficult to conceive of Mr. R.'s clothing being folded in exactly the same way on different occasions. If the leaflet pictures are to be accepted, Glyoxylide evidently works so rapidly that the cancer masses melted away before Mr. R. had an opportunity to pull down his shirt.

Koch's presentation of the theoretical basis of his treatment involves a smattering of the sciences, thoroughly agitated in the author's cerebrum and poured on paper. One reads of the reputed peregrinations of electrons in body processes, the alleged effects of mitogenetic and necrobiotic rays, oxidative processes unknown to biochemistry, an alleged relation of photochemical reactions to the effects of carcinogenic hydrocarbons, and immune reactions completely foreign to modern immunology. The phraseology may be impressive to the novice; to any one with even a modicum of scientific education the major portion of the treatise is pure nonsense.

The author presents what purports to be a chemical reaction whereby "Glyoxalic acid . . . passes by way of glyoxal into glycollic acid and oxallic [sic] acid with the unsaturated diketone, vinyl dioxide in hydrated form as an intermediary . . ." Careful inspection of the structural formulas alleged to represent these substances shows that only one of them (oxalic acid) is properly indicated. The exact nature of Glyoxylide is not stated; this compound presumably has something to do (just what is not clear) with an alleged unsaturated diketone which Koch represents thus:

O=C=C=O

This appears to be as incomprehensible as the other structural formulas already mentioned; the existence of such a compound is at least improbable.

A companion-piece of Koch's Glyoxylide letter, emanating from the same Detroit address, is from Gerrit John Warnshuis, announcing his identification with the Koch Cancer Clinic. In this Warnshuis states in the second paragraph:

"After eighteen years of extensive clinical tests it is now clearly apparent that the vicious persistency of the American Medical Association in adhering to its original policy of accepting the hasty condemnation given by the Wayne County Medical Society to Koch's work is unjustified and against public interest. Those familiar with the facts are quite aware that the original report of the Wayne County Medical Society was not based on any serious scientific investigation of the subject. This situation has been quite clearly described in previously published statements by Dr. Koch, copies of which can be had upon request."

The Koch nostrum has been for some eighteen years before the medical profession and there is nothing even slightly resembling scientific evidence to justify any confidence in its merit. In 1918 William F. Koch of Detroit was graduated in medicine by the Detroit College of Medicine and Surgery. He had been an assistant in physiology and an instructor in histology in the University of Michigan Medical School. He also had been professor of physiology in the Detroit College of Medicine and Surgery. Less than a year after his graduation in medicine Dr. Koch announced that he "had developed a real specific cure for cancer." His thesis at that time seemed to be that cancer was caused by a micro-organism resembling the spirochete of syphilis. He claimed that he had developed a differential poison —"Koch's Synthetic Anti-toxin," that would destroy the "cancer germ" without injuring the host. This remedy has been described in one place as "a synthetic chemical compound of very definite molecular arrangement" and in another place as a "difficultly prepared synthetic structure, worked down on a recrystallization process"—two descriptions that make up in sonorousness what they lack in clarity.

Undisputable records do not reveal a single instance in which a case of unquestioned malignant disease has been cured by the Koch treatment. There is, however, plenty of information regarding individuals who "promptly died" after taking the treatment.

At different times the Wayne County (Detroit) Medical Society has appointed three committees to investigate Koch's "cure." Each of the three reports has been unfavorable.

These facts have been discussed at different times in THE JOURNAL, and the matter is available in reprint form to any one who will send a self-addressed, stamped envelop for it. The Koch treatment is a highly commercialized promotion of a nostrum now elaborated from limitation as a cancer cure to the fields of tuberculosis, psoriasis, asthma and similar chronic conditions. Cancer quackery is cruel and ghoulish. The other conditions are chronic diseases involving great numbers of people ever hopeful and therefore a fertile source of income for all varieties of charlatanism. The record of Koch during the eighteen years since he first appeared on the horizon of quackery is not such as to indicate any safety in reliance on him or his products. His new associates are not reputed for scientific attainment or for any other reason except the kind of repute earned by association with William F. Koch.

MISBRANDED "PATENT MEDICINES"

Abstracts of Notices of Judgment Issued by the Food and Drug Administration of the United States Department of Agriculture

[EDITORIAL NOTE: The abstracts that follow are given in the briefest possible form: (1) the name of the product; (2) the name of the manufacturer, shipper or consigner; (3) the composition; (4) the type of nostrum; (5) the reason for the charge of misbranding and (6) the date of issuance of the Notice of Judgment—which may be considerably later than the date of the seizure of the product.]

Live-On Treatment.—Live-On Medicine Co., St. Louis. Composition: Essentially rhubarb extract, tar, vinegar, alcohol and sirup. For coughs, catarrh, asthma, etc. Fraudulent therapeutic claims.—[*N. J. 21227; August, 1934.*]

Glenn's Sulphur Soap.—Century National Chemical Co., New York. Composition: Essentially sulfur (34 per cent), soap (59 per cent), perfume and water. For skin disorders such as eczema, acne, etc. Fraudulent therapeutic claims.—[*N. J. 23299; May, 1935.*]

Correspondence

STATUS OF ALLERGY TEACHING

To the Editor:—In The Journal, April 18, page 1409, Dr. Richard A. Kern comments on my article entitled "Status of Allergy Teaching as Indicated in Medical School Announcements," which appeared in The Journal, Aug. 31, 1935, pages 744-746.

A reply would require reprinting my entire article; the points that he raised are answered not only in the body of my article but also in tables analyzing the data.

I have a few extra reprints for any one interested in the controversy.

I. Harrison Tumpeer, M.D., Chicago.

THE LEUKOPENIC INDEX AND FOOD ALLERGY

To the Editor:—The editorial on "The Leukopenic Index and Food Allergy" in The Journal (June 6) refers to eight papers by various authors, on variations in the leukocyte count, either fasting of postprandial. These quotations emphasize the sometimes extremely wide variation in leukocyte counts, even the fasting counts, when they are repeated at long or short time intervals.

While the quotations are correct, they do not consider the fact that these wide fluctuations take place almost always in the afternoon and that the morning white counts are surprisingly constant as compared with those of the afternoon.

With one exception the articles referred to show that it is customary to observe a fasting fluctuation of around 2,000 during the morning hours, although, as in my experience, there are exceptions. The one article in which this is not true deals only with infants under 25 weeks of age. It is well known that there is a very pronounced variation in white counts in the new-born.

The leukopenic index determination is made in the morning, with the patient fasting. My own observations on the normal morning fluctuation of the fasting white counts as based on leukopenic index studies are quite in agreement with the morning observations of the authors referred to. Their observations are not opposed to my own. A detailed analysis of the observations of these authors will appear in the September issue of the *Journal of Laboratory and Clinical Medicine* under the title "The Leukopenic Index as a Diagnostic Method in the Study of Food Allergy."

Warren T. Vaughan, M.D.,
Richmond, Va.

GLOMUS TUMORS

To the Editor:—The article "Glomus Tumor" by F. J. Jirka and C. S. Scuderi in The Journal, July 18, gives a fairly complete bibliography but fails to mention two articles in the English literature. One is a complete description of this condition, with expensive color photographs, by Victor Raisman and Leo Mayer, under the title of "Tumor of the Neuromyo-Arterial Glomus," and appeared in the *Archives of Surgery* (**30**:911-929 [June] 1935). The Journal of July 27, 1935, gave quite a long abstract of this on page 313. The other is an article by M. S. Burman and A. M. Gold in the *New York State Journal of Medicine* (**35**:618-620 [June 15] 1935). In the bibliography of this second article there is reference to an article by F. E. Adair (Glomus Tumor, *Am. J. Surg.* **25**:1 [July] 1934). These three papers deserve mention, as they appeared before the excellent description by Lewis and Geschickter mentioned in the bibliography.

Abraham S. Rothberg, M.D., New York.

EFFICACY OF GARGLES

To the Editor:—In a communication to The Journal, May 9, page 1679, I mentioned my objection to the roentgenographic method of investigating the efficacy of the gargle, as well as the fallacy of the conclusions arrived at by this method. I mentioned that it was more logical to inspect the interior of the throat directly and stated that after gargling with a suspension of bismuth the mouth, pharynx, tonsils and piriform recess are found coated with the bismuth.

June 27 there appeared in The Journal, page 2253, a communication from Dr. H. M. Walker of London, stating that he fully agreed with my conclusions. He mentioned, however, that on investigation of ten patients whom he had gargle with a solution of methylene blue after administration of atropine, in no instance had the fluid reached (stained?) the tonsil, posterior pharyngeal wall, or other structures. This led him to the conclusion that gargling was entirely useless as a method of introducing an antiseptic medication to the tonsil or pharynx. His experience being at such variance with my own, I find it necessary to continue the controversy or leave the impression of agreeing with Dr. Walker's conclusions.

In my original investigation I also employed a gargle of methylene blue solution (2 per cent aqueous), and after gargling for a whole minute I was surprised on inspection that the vigorous agitation had left the mouth and throat of the patient unstained. I then tried application of the solution with a cotton swab and found it almost impossible to stain the normal mucous membrane of the mouth and throat. The tongue of course staining readily. I then tried a bismuth suspension, which, as I stated, coated the mouth, tonsils, posterior pharynx and piriform recess. This of course is no indication of the efficacy of the gargle but of the fact that the solution does reach these various parts of the mouth and throat.

Julius Kaunitz, M.D., New York.

BARBITURATES AND IRRADIATION

To the Editor:—In The Journal, May 2, page 1588, Dr. I. S. Trostler of Chicago discussed briefly the harmful effects of the barbiturates during irradiation. A case reported by Uhlmann on roentgen reaction elicited by barbiturates *(Deutsche med. Wchnschr.* **63**:216 [Feb. 7] 1936) is incorporated in Trostler's note.

Our review of Uhlmann's original report suggests strongly that it was a case of ordinary dermatitis medicamentosa. It is generally accepted by dermatologists and radiologists that a drug eruption will cause the skin to be more sensitive to any type of external irradiation. Since the appearance of an eruption due to barbiturates is relatively rare in view of their extensive use, and since it usually develops in people with marked hypersensitivity, it seems that the use of barbiturates to overcome nausea and vomiting as a result of irradiation is not contraindicated. We have previously reported (Popp, W. C.: Nausea and Vomiting Following Roentgenologic Treatment, *Proc. Staff Meet., Mayo Clin.* **11**:222 [April 1] 1936; discussed by M. W. Binger, p. 223) the beneficial effect of pentobarbital sodium in preventing roentgen nausea. We have used pentobarbital sodium in doses up to 4 grains (0.26 Gm.) at each treatment session and have in some cases given total doses of 30 grains (2 Gm.) in a series of more than 150 patients undergoing roentgen treatment. We have seen no excessive roentgen skin reactions in any case, and, since this drug produces definite relief of roentgen nausea, we feel that its continued use is indicated in spite of the fact that it may rarely cause a drug eruption.

W. C. Popp, M.D.
M. W. Binger, M.D.
Rochester, Minn.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

TOBACCO AND HEART DISEASE

To the Editor:—A few days ago I was called to a restaurant to examine a man, aged 76, who had suffered a momentary syncope shortly after finishing a light supper. There was nothing to the supper or to the circumstances at the time that could be especially implicated as causing the ictus. On examination I found a blood pressure of 150 systolic, 100 diastolic, and a pulse rate of 56 beats per minute, with an occasional extrasystole. There were no abnormal sounds or murmurs on auscultation of the precordial area. I put the patient to bed, ordering absolute repose. Finding that he was in the habit of smoking six cigars during the afternoon and evening, I limited him to one after dinner and one after supper, believing that the psychologic effect of limiting the number would be preferable to the absolute prohibition of smoking after so many years of indulgence. The patient was quite worried as to the slight irregularity in his pulse, for he said that he had had a physical check up shortly before coming to Mexico City and that no such irregularity had ever been encountered. For that reason I referred him to an eminent cardiac specialist in this city for examination. The electrocardiogram showed an interpolated ventricular extrasystole in lead 1 and slight negative irregularity ST in lead 2. The consultant diagnosed an arteriosclerosis and gave his opinion that the disturbance the week before was of coronary origin. He absolutely forbade the use of tobacco. (Blood examination the day after the attack showed urea nitrogen 17.35 mg. per hundred cubic centimeters of blood; urinalysis, a few pus cells. Subsequent blood pressure readings have been between 115 and 140 mm. of mercury, maximum. The reason for my letter is the advertisements that have appeared in THE JOURNAL of the Canava Cigars in the Nov. 2, 1935, issue and the advertisements of the Health Cigar Company appearing weekly. Does the publishing of these advertisements indicate that the Council on Pharmacy and Chemistry approves these products and the advertising copy? The article by Lampson in THE JOURNAL, June 1, 1935, page 1963, is quite encouraging as to permitting the use of denicotinized tobacco, but Wright and Moffat's article of Aug. 4, 1934, page 318 does not seem in complete accord, and the previous article on the "Nicotine Content of Tobacco" (July 29, 1933, p. 385) shows quite a variable content in so-called denicotinized cigars and cigarets. Just how liberal can one be in their use, and do you think that in the present case it would be permissible to allow a cigar after meals, preferably of the type advertised in THE JOURNAL.

M.D.

ANSWER.—The reasonable limitation of tobacco advised in this case is in accord with the opinion of a large number of physicians specializing in heart disease in this country. One cigar, preferably of a partially denicotinized type, after meals, should not cause harm even though there is a moderate amount of heart disease present, unless it is clear that this use of tobacco precipitates trouble. There are many individual variations, but most patients can use a moderate amount of tobacco without toxic symptoms and without harm to the heart.

It seems unlikely that in the case in question there is any severe acute coronary disease. The momentary syncope does not point to this in the absence of other symptoms, and extrasystoles certainly do not indicate its presence. The electrocardiogram did apparently show some abnormality of the ST interval in lead 2. Some chronic heart disease, most likely coronary disease, may have been responsible. On this finding alone one cannot diagnose coronary occlusion.

On general principles it is well in the presence of coronary disease to advise moderation in all things, including tobacco. The complete omission of tobacco is often worth while in such individuals if such omission does not cause great discontent, but it is not usually essential.

INCUBATION PERIOD

To the Editor:—What is the derivation of the term "incubation period"? Can you refer me to comprehensive articles on incubation periods? What is the present-day explanation of the incubation period? Please omit name.

M.D., Massachusetts.

ANSWER.—"Incubation" is derived from the Latin verb *incubare*, to hatch out, and incubation in one sense means hatching. To find out just when and where incubation was introduced into medical literature would require a great deal of work; the Oxford Dictionary refers to its use by George Gregory in the fourth edition (1835) of his Elements of the Theory and Practice of Physic. In one of the earlier editions Gregory makes this statement: "Attempts have been made to ascertain the exact period at which contagion begins to exert its influence, and it has been satisfactorily shown in this respect that each particular contagion acknowledges a different law." With time the conception of incubation became clearer and in Austin Flint's Treatise of the Principles and Practice of Medicine, 1886, page 97, one reads: "Incubation, signifying hatching, relates to the time which elapses after the reception of special causes of disease before any morbid manifestations take place. For example, after inoculation with the virus of smallpox a certain number of days elapse before any morbid phenomena make their appearance. But, in the meantime, occult operations are going on in the system, and when these are sufficiently advanced the period of invasion or access begins. The significance of the word incubation is thus apparent. It is rendered especially significant by the germ doctrine of the causation of many diseases. The existence of the period of incubation is one of the points in evidence of the truth of this doctrine." At present the incubation period is generally interpreted in harmony with this statement as the time that elapses between the entrance into the body of the agent of an infectious disease and the clinical manifestations of that disease. What happens during this period? In diseases such as diphtheria and scarlet fever, in which the main disturbances are not due to generalized infection but to intoxication by specific toxins, the incubation period would seem to be occupied with the elaboration in the throat and other places of local infection of sufficient toxin to cause characteristic symptoms. The time required appears to vary somewhat from case to case; hence the incubation period of diphtheria and of scarlet fever, though comparatively short, varies in length. In certain other diseases, notably measles, smallpox, chickenpox and vaccinia, the incubation period is longer and as a rule more precise. Here there is reason to believe that during incubation the infectious agent, which may be multiplying, sets up reactive processes in the body of the patient with elaboration of specific antibodies, and that the acute attack is caused by the products of the interaction between the infectious agent, the antigen, and the specific antibodies. Undoubtedly the two lines of explanation now suggested of the incubation period may play a varying part in different infections. At any rate the specific poisons of infecting microbes and the reaction between microbe and specific antibodies both take part in the phenomena of infection and both require time for their evolution.

VASOMOTOR RHINITIS

To the Editor:—In a definite case of vasomotor rhinitis in which no etiologic factor can be found after thorough skin testing by a most competent allergist and the nasal secretions show an eosinophil count of 25 per cent, what can be done to offer relief? The patient has no intranasal disorder and does not respond to the usual treatment of ephedrine, epinephrine and so on. Ionization has been tried three times (eight minutes, 10 milliamperes on both sides) with only temporary relief. There is no allergy or history of allergy in the family. How can one prove to one's satisfaction a physical allergy and if so what can be done? I would appreciate any suggestion as to treatment. What do you think of alcohol injections intranasally? Please do not use my name.

M.D., New York.

ANSWER.—The presence of an eosinophil count of 25 per cent in the nasal smear would seem to clinch the diagnosis of "allergic" rhinitis, despite the failure of the history and skin tests as clues to finding the cause of symptoms. Let it be assumed that skin tests have been adequately carried out, with tests for all possible causative factors, including foods, animal derivatives, pollens and such miscellaneous substances as orris root, cottonseed, house dust, flaxseed, silk and pyrethrum.

In many cases of vasomotor rhinitis the skin tests will be negative yet the symptoms can be shown to be due to hypersensitivity to one or more substances. It is necessary then to try various clinical procedures. First of all, the usual causes of vasomotor rhinitis should be avoided as completely as possible—contact with animals, as the dog, cat or horse. Feather pillows or comforters should be removed, in many cases excellent results are obtained by enclosing completely the pillows and mattress in rubberized sheeting, sewed securely. Orris root is probably the most common cause of vasomotor rhinitis in women; there are several orris root-free cosmetics on the market, any one of which may be recommended. Ozite paddings under carpets should be removed, if present, as well as dusty rugs, curtains or drapes. Occasionally the symptoms come from some ordinary drugs, such as quinine or acetylsalicylic acid. Sometimes occupational dusts may be factors, such as wheat flour, cottonseed, linseed or flowers. Foods too are frequent offenders and elimination diets may be very successful. There are various ways of trying these, such as (1) beginning with milk alone for two or three days and then adding foods, (2) starting with a full diet and gradually removing suspected foods, or (3) starting with simple fixed diets and adding new foods at intervals. Food diaries are helpful.

If all these measures fail, one must turn to nonspecific measures, of which there are many. Vaccine therapy, autogenous or stock (no special choice), is probably the best. Injections of iodides sometimes are of service. Autohemotherapy occasionally is an aid. As ionization has failed it is unlikely that any other local procedure will succeed; though injections of alcohol may be tried, that method is not recommended.

It is well in all cases to build up the general resistance of the patient to as high a standard as possible. To this end removal of foci of infection, tonics, glandular products when indicated and vitamin therapy are to be tried.

It is not easy to demonstrate physical allergy, although history of symptoms occurring only in cold air, or in warm places, or only with exertion, are suggestive. Desensitization to heat and cold have been attempted by gradual exposure and some results have been reported.

PAIN IN OVARIAN AREA

To the Editor:—I have under my care a woman, aged 35, divorced, engaged in office work, who contracted syphilis several years before she became a patient of mine, and her symptoms were such that the disease was discovered only through the routine Wassermann test. In spite of intensive treatment, we have been able to get only a negative Wassermann reaction. Since the disease had gone so long without any special treatment, however, I have not been greatly surprised at this. Two years ago I operated on her, removing a chronically inflamed appendix and a cystic portion of the right ovary. I think now that probably much of the previous pain was caused by the ovary instead of the appendix. The most troublesome symptom now is a severe aching, cramping pain in the lower right quadrant of the abdomen, coming always between the fifteenth and the twentieth day after the beginning of the menstrual period. At times this is very severe, almost disabling her for her work. The pain lasts usually for about three days and gradually disappears, and an occasional attack is very mild. It is my own opinion that this pain is probably due to ovulation. On this basis I have wondered if it might be possible to sterilize the right ovary alone, using the x-rays, and if so whether or not it would probably bring about a cessation of the trouble. Any suggestions you may care to make with regard to this case will be gratefully received. M.D., Nebraska.

ANSWER.—The relationship of the pain to ovulation can be determined less accurately from the time of the preceding menstruation than from that which follows ovulation. If the distress is acute and at its height approximately fourteen days prior to menstruation, it is very likely that the precipitating cause of the pain is ovulation. Even so, there is probably an associated pathologic condition.

In most cases with a history such as this, there are complicating pathologic conditions in the right lower quadrant, most often adhesions, sometimes an unhealthy ovary—perhaps adherent or cystic or both.

The use of x-rays for the purpose of producing ovarian atrophy is contraindicated in most patients with pain, because pain usually betokens an inflammatory condition or adhesions. Unilateral irradiation to produce atrophy of one ovary is rarely attempted and is not on record in a sufficient number of such cases to warrant deductions as to its efficacy. Theoretically the outlook is dubious with such treatment. Palliative care or surgical intervention, preferably the latter, would be the procedure of choice, despite the fact that the patient has already been subjected to one operation.

SYPHILIS OF THE CENTRAL NERVOUS SYSTEM

To the Editor:—A man, aged 30, had an intra-urethral chancre, with a 4+ Wassermann reaction two years ago. He was given about sixty 0.45 Gm. doses of neoarsphenamine, about seventy-five intramuscular injections of bismuth salicylate and about thirty of bismuth arsphenamine sulfonate in continuous treatment. He still has a 3+ Wassermann reaction, after two years of treatment. The patient has also had a chronic bilateral otitis media for about twenty years. What further treatment do you suggest? Would you recommend a spinal puncture in a patient with chronic otitis media?

HERMAN I. SWITKES, M.D., Bronx, N. Y.

ANSWER.—It is essential that the patient's spinal fluid be examined to determine whether or not invasion of the central nervous system has occurred. The presence of a chronic otitis media is not a contraindication to doing a spinal puncture. If a positive spinal fluid report is obtained, it is advisable that the character of the condition found be noted. For example, the test should include not only a Wassermann test but also a cell count (done soon after withdrawal of the fluid), a globulin estimation and a colloidal gold test. The degree of positivity or, in other words, the character of the spinal fluid report, is a valuable guide in subsequent treatment. If the report shows evidence of a paretic formula, fever therapy (malaria) would seem warranted in this case. If a patient has had intensive treatment, and a persistently positive spinal fluid is found, the use of nonspecific measures is warranted. If the patient's spinal fluid is weakly positive, persistence in treatment or the use of intraspinal therapy may reverse it to negative. If the spinal fluid report is negative examination of the heart and viscera for evidence of syphilis is advisable, and if such examinations are negative, the alternate use of courses of bismuth compounds and mercury, fifteen injections of each to a course at intervals of two months, are recommended. This treatment should be continued for the ensuing three years.

CHRONIC ARTHRITIS

To the Editor:—A man, aged 62, 6 feet (183 cm.) tall, weighing 155 pounds (70 Kg.) has lost 20 pounds (9 Kg.) in five months but is in good general health. While playing tennis last July he noticed pain of a gnawing character in the right shoulder joint, with sharp stabbing pain in the arm muscles and with stiffness and wasting of the muscles. The pain was relieved by exercise but soon returned. He feels toxic and fatigued but has no fever. The pulse is about normal. The pain gradually spread to the left shoulder and arm, with pain and stiffness of the wrist joints and fingers and also involvement of the cervical and dorsal spine. Later it spread to the hip joints, with aching and pain in the legs and feet. The pain is worst at night and he is unable to sleep more than an hour at a time. The urine is normal but he micturates excessively at night. The tonsils, teeth and sinuses have been explored by x-rays and found normal. There is no evidence of appendicitis or gallbladder infection. The prostate is quite large but without sign of any infection. There is a history of constipation during adolescence but not of late years. The stools are now greenish and pasty and he has to use laxatives and enemas for relief. His appetite is good but he feels drowsy, has a slight headache and is tired. The blood pressure is 130 systolic, 70 diastolic. The blood sugar is 170 mg. Blood count is normal except for a leukocytosis of from 13,000 to 15,000. The Wassermann reaction is negative. My diagnosis is atrophic arthritis and I first saturated him with salicylates without avail. Acetylsalicylic acid in doses of from 15 to 20 grains (1 to 1.3 Gm.), however, give him some relief. I have tried colloidal sulfur, 10 grains (0.65 Gm.) intravenously every other day, but this has not given any relief. I have restricted carbohydrates in the diet and increased fruits and vegetables. Do you think my diagnosis is correct? What preparation of colloidal sulfur has met with most success and in how large doses? Are stock vaccines of any service? How about Russian baths or treatment at a hot spring? I will appreciate any suggestions for treatment in this case. Please omit name.

M.D., Chicago.

ANSWER.—The presence of chronic polyarticular involvement with considerable disability, loss of weight and fatigue suggest chronic atrophic (infectious, rheumatoid) arthritis, although the patient is at an age when chronic hypertrophic arthritis is more common. A diagnosis of "tennis arm" is of course untenable in view of the polyarticular progression, but the initial appearance and occurrence of symptoms in a region of trauma illustrate the importance of trauma in precipitation and progression of the disease and illustrate also the importance of reducing chronic trauma of weight bearing or occupation to the affected joints.

Careful attention to all foci seems to have been given. Special roentgenographic examination of the bowels, culture of the stool, and tests of the passage of charcoal reveal data of questionable significance; therefore they cannot be urged, although they might be made. Sulfur in various forms is an old remedy for atrophic arthritis and has been discarded from time to time only to be revived periodically when a new preparation of sulfur is exploited. The use of colloidal sulfur is now being energetically pushed by various manufacturers. Only a few clinical reports are so far available. Some users are enthusiastic, at times violently so; others have been disappointed with results. None of the work to date has been well controlled. Opinions differ as to the value of a low carbohydrate diet or of stock vaccines. If the patient does not improve materially after being on a restricted carbohydrate diet for a reasonable time, it would be well to advise a fairly high carbohydrate, high vitamin, anticonstipation diet but to avoid obesity. If the arthritis is progressive, a trial of stock vaccine is justified. The vaccines in most current favor are those of Dr. R. L. Cecil of New York, Dr. E. C. Rosenow of Rochester, Minn., and Dr. J. C. Small of Philadelphia and can be obtained by writing to these men.

Physical therapy of various sorts may provide more relief than any other treatment but should be used in conjunction with other treatment. The superior physical therapeutic facilities of spas are undoubted; but if physical therapy is not continued consistently by the patient after leaving the spa the advantages of a short stay at a hot spring may be but temporary. The patient should be instructed in methods to be used daily in his own home and supplemented by professional physical therapy in a physician's office or physical therapy technician's office two or three times a week if possible. Instructions in

home physical therapy can be given by a trained technician or can be obtained by writing to Mr. H. A. Carter, secretary of the Council on Physical Therapy of the American Medical Association.

If an intensive program of adequate rest, daily physical therapy, a nutritious eliminative diet and trial of an arthrotropic streptococcus vaccine are not soon productive of improvement, attention to other available methods of treatment is in order and the correspondent is referred to a recent "Rheumatism Review" published for the American Committee for the Control of Rheumatism, which appears in the *Annals of Internal Medicine* for April, May and June 1935.

MODERN TREATMENT OF VAGINITIS

To the Editor:—Since August 1935 I have been treating a gonorrheal vaginitis and Bartholin abscess in a girl, aged 6 years. She is in good condition except for this infection, which is of about two years' duration. Smears have revealed numerous gram-negative intracellular diplococci on several occasions. Treatment began with a course of oral amniotin in doses of 1,000 international units three times a week. After ten weeks the patient showed a tinge of blood in smears and in the discharge. Smears at this time showed a mixed type of infection and the discharge was unabated. Treatment was changed to the Corbus-Ferry gonococcus toxin, which was given at weekly intervals until a maximum dosage of 0.4 cc. of the undiluted toxin was given. This resulted in the healing of the Bartholin abscess, which had continued to discharge following electrocoagulation and incision. At this point the treatment with oral amniotin in doses of 1,000 international units three times a week was resumed. At the end of the second week the discharge showed a slight bloody tinge. The discharge is profuse and there are numerous organisms, diplococcic and bacillary in form. The vaginal discharge is profuse. What is the proper dose of oral amniotin for a child of this age? Have you any suggestions as to treatment? All local remedies such as irrigations, suppositories, ointments and local applications have been of no avail. Is nonspecific protein therapy advised? Please omit name. M.D., Nebraska.

ANSWER.—The treatment with preparations containing estrogenic substance is purely empirical and the dosage is unsettled. The treatment is intended to stimulate proliferation of epithelial cells of the vaginal mucous membrane and thus render the vagina more resistant to infection. R. M. Lewis (*Am. J. Obst. & Gynec.* **26**:593 [Oct.] 1933) advised small doses of theelin given at short intervals in the belief that they are more effective than larger doses given less frequently. The hormone treatment has not, however, been generally accepted as a cure of gonorrheal cervicovaginitis. The gonococcus attacks glandular structures such as are found in the endocervix, Skene's and Bartholin's glands, and recurrence or persistence of the discharge is usually due to latent infection in one of these sites.

Te Linde and Brawner (*Am. J. Obst. & Gynec.* **30**:512 [Oct.] 1935) report that the oral use of amniotin was ineffective in their cases of gonorrheal vaginitis in children but that the daily hypodermic administration of amniotin in oil gave good results and the daily use (at bedtime) of amniotin vaginal suppositories produced excellent results. Presumably, other estrogenic preparations would be equally effective.

In chronic cases of cervicovaginitis such as the one described, a vaginoscopic examination should be made. By this means the source of the discharge may be disclosed. A male urethroscope may be used as a vaginoscope and the examination can be made without anesthesia. If the cervix is observed to be infected, electrothermic cautery treatment may be given as in adults with chronic endocervicitis (Titus, E. W., and Notes, B.: *Arch. Pediat.* **50**:284 [April] 1933). Topical applications of weak solutions of silver nitrate may be made to the infected areas by direct vision through the vaginoscope. These may be followed by daily instillation of 1 per cent mercurochrome ointment (Stein, I. F.; Leventhal, M. L., and Sered, Harry: Cervicovaginitis, *Am. J. Dis. Child.* **37**:1203 [June] 1929) or by irrigation with 1 per cent lactic acid solution.

L. H. Biskind (*Surg., Gynec. & Obst.* **57**:261 [Aug.] 1933; *Lancet* **2**:1049 [Nov. 9] 1935) and José Farriols (*Arch. de med., cir. y especialid.* **38**:52 [Jan. 30] 1935) report excellent results in the treatment of vaginitis by the use of basic phenylmercuric nitrate or phenylmercuric borate, which have the highest antiseptic potency of any compounds so far discovered (Report of the Council on Pharmacy and Chemistry, THE JOURNAL, April 14, 1934, p. 1224). The technic as given by Biskind for treating vaginitis in children is as follows: An endoscope is inserted when possible, a smear taken and 1 or 2 cc. of a 1:1,500 aqueous solution of basic phenylmercuric nitrate is instilled with a blunt syringe into the vagina, the hips are elevated and the solution is thus retained for several minutes. This is done once or twice a week. Daily or twice daily irrigations are made with a pint of 1:25,000 solution of basic phenylmercuric nitrate by means of an infant enema tip or a soft rubber catheter.

DYNAMICS OF HEART AND CIRCULATION

To the Editor:—A man, aged 70, who has had attacks of paroxysmal tachycardia at irregular intervals since the age of 15, was seized with an attack at 2:30 p. m., February 2, which lasted until 5:40 p. m. the same day. His pulse rate in the attack was found to be 210, which is three times his ordinary pulse rate. His blood pressure, which is ordinarily about 130 systolic and 80 diastolic, was found to be 76 systolic and 60 diastolic. There were no signs of congestive circulatory failure, no râles over the pulmonary bases, no coldness of the extremities or visible edema. The blood pressure remained about the same as already noted (76/60) for half an hour after the cessation of the attack and then began to rise. These observations were made by another physician, who reported them to me. The query suggested by these observations is this: Does the commonly accepted theory of the dynamics of the circulation, which is expressed in a recent textbook on physiology (Wiggers: Physiology in Health and Disease, 1934, p. 509) as follows: "The ventricles pump the blood from the terminal reservoirs (auricles) into the distributing system under an initial pressure sufficient to secure a continuous capillary flow, as well as a return flow to the heart," fully explain the circulatory dynamics in this case? Could the heart alone, contracting at the rate of 210 per minute in the very low portion of the blood pressure scale (76/60), and with a pulse pressure of only 16, develop force enough to push the blood mass through the vascular circuit in the accepted circulation time, against the resistance in the hundred thousand miles or more of vascular tubing (Statistical Data in Human Anatomy, THE JOURNAL, May 12, 1934, p. 1632) in the successful manner in which it was observed to be done in this case?

EDWARD E. CORNWALL, M.D., Brooklyn.

ANSWER.—No difficulty is offered in explaining the facts presented in accordance with the currently accepted views concerning the dynamics of the heart and the circulation. When the heart rate increases to 200 or above a minute, the period of diastolic filling is cut short to such an extent that not only each systolic discharge but also the minute output is decreased. The effects on systolic and diastolic blood pressure are those of decreased systolic discharge; i. e., the effects would be the exact opposite of those described in the textbook mentioned, page 600, for augmented systolic discharge. No other dynamic effect is conceivable than that systolic pressure should fall more than diastolic. This is beautifully illustrated by the data in the case presented.

It must not be forgotten that the blood pressure 76/60 mm. of mercury in the central vessels, regardless of how created, represents the pressure head that forces blood through the vascular circuit. References to the hundred thousand miles of vascular tubing should not be misinterpreted. It is conceivable that the minute vessels, if placed end to end, might stretch round the globe just as considerable linear mileage could be calculated if all the streets of Brooklyn were similarly connected. It would be unfair, however, to leave the impression that a tourist passing through Brooklyn would actually have to travel that distance or would meet the traffic resistance of all the streets combined. This is equally true for circulating corpuscles.

SPECIFIC GRAVITY OF URINE

To the Editor:—Assuming that the temperature of the water is the same as the urine and that no protein is precipitated, is the specific gravity of urine diluted with water in direct proportion to the dilution? I have apparently not found this to be the case, although I admit that I have not controlled the temperature. Thus a specimen of 15 cc. was diluted with 30 cc. of water and the specific gravity was 1.012; was the true specific gravity 1.036? Another was diluted with equal parts of water and the specific gravity was 1.018; was the true specific gravity 1.036?

SAMUEL L. IMMERMAN, M.D., Philadelphia.

ANSWER.—At a constant temperature and in the absence of any precipitation, the specific gravity of the urine diluted with distilled water will vary in direct proportion to the dilution. A specimen with a specific gravity of 1.036 diluted with an equal amount of water should show 1.018.

Specific gravity is one of the most important tests in estimating renal function. The procedure is simple, but before placing reliance in the results one should be certain that the readings are correct. The urinometer should be twirled as it goes into the urine to prevent adhesion to the side of the container and also to remove any air bubbles that might adhere to the bulb. The urinometer should be a long one with a stem at least 3 inches long, and should be graduated from 1.000 to 1.040. The very small urinometers with close graduations are worse than useless.

Each urinometer should be tested by immersion in distilled water at room temperature, when the reading should be exactly 1.000. It should again be tested with an accurate 5 per cent solution of sodium chloride, which will give a specific gravity of 1.035 at 25 C. (77 F.).

The specific gravity of urine varies considerably with the temperature. At body temperature of 37 C. it is 5 points lower than at 25 C., or room temperature. For urines at extreme

temperatures, corrections should be made by adding 0.001 for each 3 degrees centigrade above the temperature for which the urinometer is standardized, or subtracting 0.001 for each 3 degrees centigrade below. Some urinometers are supplied with a thermometer specially graduated for making quick corrections. It is always better to get sufficient urine than to dilute with tap water to make the reading.

USE OF DIGITALIS AS PREVENTIVE OF CARDIAC HYPERTROPHY

To the Editor:—Christian asserts that digitalis, apart from its value in controlling cardiac decompensation, is valuable in inhibiting cardiac hypertrophy and retarding the aging process of the myocardium. Therefore, he advises use of digitalis in all cases of hypertrophy and in cases in which hypertrophy is likely to appear (hypertension, murmurs, rheumatic heart disease with murmurs, and so on) for the remainder of the patient's life. He believes that cardiac hypertrophy, instead of being a beneficent process, has an injurious influence on the functions of the heart. I remember reading an article in which Cloetta proved Christian's contentions by animal experimentation. I have been considering advocating this therapy to a number of my patients but I should first like to know whether there is any evidence to show that such a long continued use of digitalis would be harmful and also whether larger doses of digitalis would prove successful in a patient with decompensations who had been taking digitalis for several years according to Christian's teachings. What seems to be the consensus among cardiologists concerning this form of preventive medicine? Is there much clinical proof to back it up? Please omit name.

M.D., New Jersey.

ANSWER.—As mentioned in the query, Cloetta has asserted that cardiac dilatation and hypertrophy secondary to experimentally induced aortic insufficiency of animals can be prevented or be reduced in degree by administering digitalis. Observations in man indicate that part of the beneficial effect of digitalis in patients with dilated and failing hearts is due to the increase in the "tonus" of the myocardium and to the reduction in the size of the heart. Evidence also exists showing that in the majority of instances cardiac hypertrophy is preceded by cardiac dilatation. Indeed, it is claimed that primary dilatation of the ventricles and the resulting stretching of the myocardial fibers serve as a stimulus to hypertrophy. Clinical observations indicate that a hypertrophied myocardium often is inadequate in function. Thus there is indirect support for the belief that digitalis may be beneficial in the prevention of ventricular dilatation and hypertrophy. Whether digitalis actually accomplishes such a function is not known, as the proof of such therapeutic action is exceedingly difficult to establish. Hence, such a therapeutic practice is based on clinical suggestion and on indirect evidence rather than on proof or on empirical results.

There is no reason to believe that the long-continued use of digitalis is harmful, or that it builds up "tolerance." Hence larger doses of digitalis will be beneficial in the presence of circulatory failure even if the patient has taken digitalis for several years previous to the onset of congestive failure.

Nevertheless, it is fair to state that the practice of giving digitalis to patients with organic heart lesions but with no evidence of pulmonary or peripheral congestive failure is not at present an accepted procedure.

MISCARRIAGE WITH NOSEBLEED

To the Editor:—A patient has had two pregnancies, both terminating in miscarriage, at the second and the sixth month. Each time the miscarriage was preceded by a persistent, slight nosebleed. The nose felt congested and there was a slight, steady ooze of blood. During the first pregnancy the nosebleed lasted for but a week. During the second, it started two months before the patient went into premature labor. In each case the bleeding stopped immediately after the uterus emptied itself. Examination of the nares a few weeks later showed nothing abnormal. I did not see her during the pregnancies and do not know what condition her nose presented at that time. She tells me that she has had a few nosebleeds concomitant with menstruation and she does not recall any at other times. Do you think that there is any relation between the bleeding and the miscarriages? Can you suggest any procedure to insure her a successful pregnancy?

E. M. ABRAHAMSON, M.D., Brooklyn.

ANSWER.—It is difficult to explain the relationship of the nosebleed and the miscarriages in this case without more information. It would be essential to know the blood pressure and the results of urinary and blood examination. The state of the fetus and the placenta would also be enlightening.

There are a number of possibilities that might explain both the nosebleed and the miscarriages. There may have been some nephritis or toxemia with high blood pressure, which could cause nosebleed and fetal death with abortion. There may have been some blood dyscrasia, which would cause bleeding from mucous surfaces, such as the nasal and the uterine mucosa, and which could account for both the nosebleed and the abortion. One should consider the possibility of syphilis, which might produce a nasal lesion with resultant bleeding and also cause a miscarriage. An infection of the upper respiratory tract might be responsible for one or both of the phenomena. Infectious organisms from such a focus might locate in the genitalia and cause fetal death. One should also exclude a malarial infection if the patient has lived in a district where such disease is prevalent. Malta fever might be considered, and the blood test for Brucella abortus should be carried out. In these days one has at least to consider endocrine factors. It might be worth while to determine the basal metabolic rate.

So far as treatment is concerned, one would have to be guided by additional information, but in general one would be justified in placing the patient on a diet rich in vitamins and minerals, making sure of a rather high calcium content with some iodine. Iron might be requisite if the woman should be anemic. With a low basal metabolic rate the administration of thyroid extract would, of course, be desirable.

This reply has been rather general, in view of the lack of greater detail in the query. It may be that close and detailed examination of the patient will fail to reveal the cause of the phenomena, the occurrence of which may be purely coincidental.

SUBCUTANEOUS EMPHYSEMA AFTER WOUNDS

To the Editor:—A young Negro, a hospital employee, cut his finger on a clean metal door. The injury appeared trifling and the only treatment was application of an antiseptic (tincture of merthiolate, I believe). Within twenty-four hours a mild swelling and lymphangitis of the hand developed. He suffered no pain and his general condition was excellent. Within another twelve hours there was definite subcutaneous emphysema and the patient was hospitalized. Needling of the area (the dorsum of the hand and lower forearm) revealed gas, and the swelling disappeared to recur within six or seven hours. His general condition gave no evidence of infection. The subcutaneous emphysema gradually subsided within three or four days and a complete recovery was made. Please discuss causes of subcutaneous emphysema, especially as in this case, in which I feel sure gas gangrene has been ruled out. Please omit name.

M.D., Ohio.

ANSWER.—Under the unusual causes of gas in the tissues one should consider inclusion of air beneath a blood clot or sutured wound such as of the abdominal wall and in injuries around compressed air machines. It is not likely that it would occur from an ordinary injury.

It is not uncommon to see air in the tissues in a roentgenogram for possible fracture after a rather extensive wound.

Gas may be produced in the tissues by Bacillus Welchii (Clostridium Welchii) types 1, 2, 3 and 4, Vibrion septique (Clostridium oedematis-maligni Koch), Bacillus oedematiens (Clostridium oedematiens), Bacillus fallax (Clostridium fallax), Bacillus tertius (Clostridium tertium) and Bacillus coli-verus and Bacillus coli-communior (Escherichia coli and Escherichia communior).

The first five are strictly anaerobic and the colon group may grow under anaerobic conditions.

It is well known that Bacillus Welchii was the most common cause of gas gangrene (75 per cent) and wound emphysema following war wounds, although it was nearly always associated with other organisms, especially Bacillus sporogenes and Bacillus histolyticus, which are proteolytic but do not produce gas.

Of considerable importance is the fact that only certain very virulent strains of Bacillus Welchii can produce gas gangrene when present alone in a wound and then only when necrotized tissue is present. It is this requirement which led to the development and success of the surgical procedure of débridement.

In the first few days, smears from wounds with gas gangrene having a foul smelling reddish brown discharge usually show Bacillus Welchii and streptococci. In the second week the pus becomes more purulent and Bacillus Welchii is infrequent, while streptococci, staphylococci and coliform bacilli are abundant.

The majority of war wounds having Bacillus Welchii infection cleared up without spreading gangrene. Dilute solution of sodium hypochlorite is of great value in the treatment of all gas-producing infections.

It is probable that the emphysema here was due to an avirulent or pure Bacillus Welchii infection. Certainly without careful cultures made on special mediums one could not rule out infection by some other organism mentioned.

Treatment should demand the entrance of oxygen to the tissues either by wide opening of the wound or by long surgical incisions. When muscle is infected, extension is along the fibers, necessitating incisions along the entire length of the muscle. If gangrene is present, the entire muscle should be debrided and not infrequently amputation may be necessary.

DIFFERENTIAL DIAGNOSIS OF DERMATITIS

To the Editor:—A woman, aged 68, developed an eruption on both hands about Oct. 20, 1935. There was a previous similar attack a year before, which was treated with hypodermic injections in the arm. An attack of herpes zoster occurred shortly after treatment was begun. Following the herpes, the eruption on the hands disappeared. There is a history of anxiety and worry, which preceded each eruption on the hands. The eruption began as ill defined patches of red, fissured, scaling skin between the third and fourth and the fourth and fifth digits of the left hand. An eruption then occurred on the flexor surface of the left wrist as a shiny reddish purple patch measuring 4 by 3 cm. It was flat and slightly infiltrated, and the skin was thin and cracked. There was no exudation. A patch about 2 cm. in diameter then appeared on the flexor surface of the right forearm at the junction of the middle and lower thirds. The dorsum of the right hand was next affected with an indefinite area of redness, scaling and fissuring, which was not as severe as the preceding. The eruption is preceded by itching of mild degree, and the itching continues after the eruption has occurred. In the small patch on the right forearm, several pin point sized vesicles were noted. The skin of both hands and forearms is dry, shiny, wrinkled and thin; at the elbows the skin abruptly changes to a normal appearance. Treatment with ultraviolet rays and 10 per cent naftalan ointment gave prompt relief in a week, with return of the skin to normal appearance. Dressings with zinc oxide ointment were used later. When the dressings were removed to enable her to cook Thanksgiving dinner, itching began in a few hours, followed next day by the typical chapped, fissured appearance of the eruption in the same locations as before. The patient has been instructed to avoid the use of soap and water on the hands and to wear rubber gloves while washing dishes, but she has not cooperated very well. She was formerly using Palmolive and Woodbury's soap on the hands. She uses Espey's lotion on them at present.

M.D., Illinois.

ANSWER.—The eruption described may be a mild dermatitis venenata, an eczema or an eczematoid ringworm. The history of its having cleared after an attack of herpes zoster, and again on treatment with ultraviolet rays and 10 per cent naftalan ointment favors the diagnosis of a dermatitis due to irritation of an atrophic skin. Nevertheless scales should be examined for ringworm. Mental conditions, anxiety and worry may easily have something to do with bringing on an attack. Perhaps worries about her cooking, as at Thanksgiving, or the heat or the irritation of soap and water caused a recurrence then.

The soaps mentioned are mild, but no soap at all is still less irritating. Espey's lotion probably contains Irish moss, glycerin and boric acid. The patient should be patch tested for these ingredients, as well as for soap and any other substance she handles frequently.

Judging by the evident atrophy of the skin of the hands and forearms and the frequency with which dryness and sensitization to alkalis cause dermatitis during the fall, it is probable that the dermatitis is caused in this way and should be treated, as it evidently is already being treated, by the use of soothing and softening ointments and lotions, and abstinence from soap. Cooperation on the part of the patient is absolutely necessary to success or even partial success.

PSORIASIS

To the Editor:—The special article on the treatment of psoriasis from the Cook County Hospital (THE JOURNAL, July 13, 1935, p. 115) contains no mention of dioxyanthranol (anthralin). I have seen references in literature to dioxyanthranol as the modern substitute for chrysarobin. I am wondering whether dioxyanthranol is actually superior to chrysarobin and whether it seems that it will ultimately replace chrysarobin in the treatment of psoriasis. Information in regard to this will be appreciated. Please omit name.

M.D., Georgia.

ANSWER.—In the article mentioned, as was stated, chrysarobin served only as the prototype of the general group of reducing substances to which it belongs. As other members in this group one may mention neorobin and dioxyanthranol. These were not mentioned, not because they are not of service but to keep the article within reasonable limits.

The exact merits of dioxyanthranol in comparison with chrysarobin cannot be definitely stated at present. Chrysarobin has had a much wider and longer use. It has stood the test of time. It is much cheaper than dioxyanthranol and does not deteriorate so rapidly. This is an important consideration when the combated eruption is widespread and large quantities of medicament are necessary. While chrysarobin may produce certain untoward reactions, these are well known and can be avoided with reasonable care. Nor is the use of dioxyanthranol free of all danger. It may produce irritation, sometimes severe. It stains clothing to a lesser extent than chrysarobin and has less tendency to produce conjunctivitis. It has equivalent action in approximately one twentieth the concentration of chrysarobin. As a substance, dioxyanthranol is a much more intense reducing substance than chrysarobin and this intensity has been measured. These data are to be published in the *Archives of Dermatology and Syphilology*. Dioxyanthranol samples from various batches is more uniform in strength; chrysarobin varies markedly in strength from sample to sample. Many dermatologists feel that the modern treatment of psoriasis with chrysarobin is more properly carried out in the hospital. With such proper use of chrysarobin, it is an efficient drug. It is too early since the more general use of dioxyanthranol in this country was begun to predict that it will entirely supplant chrysarobin, but the efficiency of the latter when properly used together with its easy availability makes this doubtful.

ENCEPHALOMYELITIS AFTER VACCINATION

To the Editor:—A girl baby, aged 13 months, of normal full-term delivery, had an uneventful first few months of life except for the fact that she had obstinate constipation. She has been artificially fed for the past ten months. At 10 months of age the baby weighed 20 pounds (9 Kg.). At this time she received an unsuccessful smallpox vaccination. This being negative, a second vaccination was performed two weeks later. This resulted in a severe take and the child was ill for about ten days. In the meantime she had lost her appetite and became listless. The local and general reactions subsided but were followed by a marked generalized muscular flaccidity. Prior to inoculation she was beginning to crawl and sit up, and she had made efforts to walk. Since the vaccination she has no longer made efforts to sit, crawl or walk. When an attempt is made to teach her to walk, the legs crumple up under the effort. She cannot sit erect unless propped up. Her appetite has returned, but constipation is still a marked symptom. She has developed a urinary incontinence, and there is a dry desquamation on both legs. Her cry is weak by comparison to her previous cry. She is now 13 months of age and there has been no muscular improvement. Although she has gained a little there is still asthenia of a marked degree. Has this syndrome anything to do with the vaccination? Also, what is to be done to improve the condition? These are the questions I should like answered.

M.D., Chicago.

ANSWER.—In recent times in various parts of the world, notably in Holland and England, but in other countries as well, not excluding the United States, cases of disseminated encephalomyelitis have been observed following vaccination. The first symptoms appear about the tenth day, though they may occur as early as the fourth or as late as the thirtieth day after vaccination. These patients complain of stupor, convulsions, headache, vomiting and fever. Ocular paralyses have been noted, with unequal pupils, but the involvement of other cranial nerves is not frequent. There is usually paralysis of the legs and loss of sphincter control. The neck is usually stiff, and Kernig's sign may be present.

Postvaccinal encephalomyelitis is less frequent in infants than in older children or adults. Many of these patients recover after a few weeks or months, though sometimes mental deterioration and spasticity may continue. It has been estimated that the mortality of postvaccinal encephalomyelitis is from 30 to 40 per cent. The designation of the disease, encephalomyelitis, indicates spinal cord involvement. A number of investigators have reported spinal cord lesions.

As has already been indicated, the majority of these infants tend to recover spontaneously, though unfortunately there are exceptions to this statement, because there may be residual effects. The baby may receive some benefit from warm baths, gentle massage, passive exercise and also a well balanced diet, with an eye to its nutritive qualities and the proper vitamin content.

MEASURING VISUAL CAPACITY

To the Editor:—I am at a loss to interpret the degree of impaired vision of an applicant whose physical examination form (as submitted by a physician in California) shows: Visual acuity, R. 10/32.1, L. 10/32.1. Corrected R. 20/38.4; L. 20/38.4—A. M. A. Rating. It will be appreciated if you can give your opinion of the percentage of visual acuity of this applicant, with and without glasses.

R. C. O'CONNOR, M.D., New York.

ANSWER.—10/32.1 = 20/64.2 (approximately 20/65)
= 47.5 per cent visual acuity

10/38.4 = 20/76.8 (nearly 20/80)
= 42.5 per cent visual acuity

NEW METHODS IN ACNE AND TRICHINOSIS

To the Editor:—Would you be kind enough to give me some information regarding the treatment of acne vulgaris by means of manganese preparations and the value of silver arsphenamine in the treatment of trichinosis?

A. E. DALE, M.D., Danville, Ill.

ANSWER.—Neither of these forms of treatment could be considered as accepted or as scientifically established.

Medical Examinations and Licensure

COMING EXAMINATIONS

STATE AND TERRITORIAL BOARDS

ALABAMA: Montgomery, June 29-July 1. Sec., Dr. J. N. Baker, 519 Dexter Ave., Montgomery.

ALASKA: Juneau, Sept. 1. Sec., Dr. W. W. Council, Juneau.

ARKANSAS: *Basic Science.* Little Rock, Nov. 2. Sec., Mr. Louis E. Gebauer, 701 Main St., Little Rock. *Medical (Regular).* Little Rock, Nov. 10. Sec., Dr. A. S. Buchanan, Prescott. *Medical (Eclectic).* Little Rock, Nov. 10. Sec., Dr. Clarence H. Young, 207½ Main St., Little Rock.

CALIFORNIA: Sacramento, Oct. 19-22. Sec., Dr. Charles B. Pinkham, 420 State Office Bldg., Sacramento.

COLORADO: Denver, Oct. 6. Sec., Dr. Harvey W. Snyder, 422 State Office Bldg., Denver.

CONNECTICUT: *Basic Science.* New Haven, Oct. 10. *Prerequisite to license examination.* Address, State Board of Healing Arts, 1895 Yale Station, New Haven.

FLORIDA: Jacksonville, Nov. 16-17. Sec., Dr. William M. Rowlett, P. O. Box 786, Tampa.

GEORGIA: Atlanta, Oct. 13. Joint-Sec., State Examining Boards, Mr. R. C. Coleman, 111 State Capitol, Atlanta.

IDAHO: Boise, Oct. 6. Commissioner of Law Enforcement, Hon. Emmitt Pfost, 205 State House, Boise.

ILLINOIS: Chicago, Oct. 20-22. Superintendent of Registration, Department of Registration and Education, Mr. Homer J. Byrd, Springfield.

KENTUCKY: Louisville, Dec. 2-4. Sec., State Board of Health, Dr. A. T. McCormack, 532 W. Main St., Louisville.

LOUISIANA: New Orleans, December. Sec., Dr. Roy B. Harrison, 1507 Hibernia Bank Bldg., New Orleans.

MAINE: Portland, Nov. 3-4. Sec., Board of Registration of Medicine, Dr. Adam P. Leighton, 192 State St., Portland.

MARYLAND: *Regular.* Baltimore, Dec. 8. Sec., Dr. John T. O'Mara, 1215 Cathedral St., Baltimore. *Homeopathic.* Baltimore, Dec. 8-9. Sec., Dr. John A. Evans, 612 W. 40th St., Baltimore.

MASSACHUSETTS: Boston, Nov. 17-19. Sec., Board of Registration in Medicine, Dr. Stephen Rushmore, 413-F State House, Boston.

MICHIGAN: Lansing, Oct. 14-16. Sec., Board of Registration in Medicine, Dr. J. Earl McIntyre, 202-3-4 Hollister Bldg., Lansing.

MINNESOTA: *Basic Science.* Minneapolis, Oct. 6-7. Sec., Dr. J. Charnley McKinley, 126 Millard Hall, University of Minnesota, Minneapolis. *Medical.* Minneapolis, Oct. 20-22. Sec., Dr. Julian F. DuBois, 350 St. Peter St., St. Paul.

MONTANA: Helena, Oct. 6. Sec., Dr. S. A. Cooney, 7 W. 6th Ave., Helena.

NEW HAMPSHIRE: Concord, Sept. 10-11. Sec., Board of Registration in Medicine, Dr. Charles Duncan, State House, Concord.

NEW JERSEY: Trenton, Oct. 20-21. Sec., Dr. James J. McGuire, 28 W. State St., Trenton.

NEW MEXICO: Santa Fe, Oct. 12-13. Sec., Dr. Le Grand Ward, Santa Fe.

NEW YORK: Albany, Buffalo, New York and Syracuse, Sept. 21-24. Chief, Professional Examinations Bureau, Mr. Herbert J. Hamilton, 315 Education Bldg., Albany.

NORTH CAROLINA: Raleigh, Nov. 30. Sec., Dr. Ben J. Lawrence, 503 Professional Bldg., Raleigh.

OKLAHOMA: Oklahoma City, Dec. 9. Sec., Dr. James D. Osborn, Jr., Frederick.

OREGON: *Basic Science.* Portland, Nov. 21. Sec., Mr. Charles D. Byrne, University of Oregon, Eugene. *Medical.* Portland, Jan. 5-7. Sec., Dr. Joseph F. Wood, 509 Selling Bldg., Portland.

PUERTO RICO: San Juan, Sept. 1. Sec., Dr. O. Costa Mandry, Box 536, San Juan.

RHODE ISLAND: Providence, Oct. 1-2. Chief, Division of Examiners, Mr. Robert D. Wholey, 366 State Office Bldg., Providence.

VERMONT: Burlington, Feb. 10-12. Sec., Board of Medical Registration, Dr. W. Scott Nay, Underhill.

VIRGINIA: Richmond, Dec. 9-13. Sec., Dr. J. W. Preston, 28½ Franklin Road, Roanoke.

WISCONSIN: *Reciprocity.* Madison, Sept. 8-9. Sec., Dr. Robert E. Flynn, 401 Main St., La Crosse. *Basic Science.* Madison, Sept. 26. Sec., Prof. Robert N. Bauer, 3414 W. Wisconsin Ave., Milwaukee.

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS. *Parts I and II.* Sept. 14-16. Ex. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia.

SPECIAL BOARDS

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOGY: Philadelphia, June. Sec., Dr. C. Guy Lane, 416 Marlboro St., Boston.

AMERICAN BOARD OF INTERNAL MEDICINE: *Written* examination will be held simultaneously in different centers of the United States and Canada in December. *Practical* or *clinical* examination will be given in St. Louis in April. Chairman, Dr. Walter L. Bierring, 406 Sixth Ave., Des Moines.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: Written examination and review of case histories of Group B candidates will be held in various cities in the United States and Canada, Nov. 7. *Applications must be filed at least sixty days prior to the examination.* Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh (6).

AMERICAN BOARD OF OPHTHALMOLOGY: New York, Sept. 26. Sec., Dr. John Green, 3720 Washington Blvd., St. Louis.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: Cleveland, Jan. 9. Sec., Dr. Fremont A. Chandler, 180 N. Michigan Ave., Chicago.

AMERICAN BOARD OF OTOLARYNGOLOGY: New York, Sept. 25-26. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

AMERICAN BOARD OF PEDIATRICS: San Francisco, Oct. 22-24. Baltimore and Cincinnati in November. Sec., Dr. C. A. Aldrich, 723 Elm St., Winnetka, Ill.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: New York, Dec. 29-30. Sec., Dr. Walter Freeman, 1028 Connecticut Ave., Washington, D. C.

AMERICAN BOARD OF RADIOLOGY: Cleveland, Sept. 25-27. Sec., Dr. Byrl R. Kirklin, Mayo Clinic, Rochester, Minn.

Maryland (Homeopathic) June Examination

Dr. John A. Evans, secretary, Board of (Homeopathic) Medical Examiners, reports the written examination held in Baltimore, June 9-10, 1936. The examination covered 9 subjects and included 70 questions. An average of 70 per cent was required to pass. Seventeen candidates were examined, all of whom passed. The following school was represented:

School	PASSED	Year Grad.	Per Cent
Hahnemann Med. College and Hospital of Philadelphia	(1934) (1935) 78.5, 80.7, 82.4, 84.6, 84.9, 87.2, (1936) 79.6, 81.6, 85.6, 86, 86.3, 86.6, 86.6, 90.6, 91.6, 92.5	(1934)	82.3,

Puerto Rico March Examination

Dr. O. Costa Mandry, secretary, Board of Medical Examiners, reports the written and practical examination held in San Juan, March 3, 1936. The examination covered 14 subjects and included 80 questions. An average of 75 per cent was required to pass. Five candidates were examined, all of whom passed. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Tufts College Medical School		(1931)	76.2
Hahnemann Med. College and Hospital of Philadelphia		(1909)	78.2
Université de Paris Faculté de Médecine		(1934)	78.6,* (1935) 75.3*
Université de Toulouse Faculté de Médecine et de Pharmacie		(1935)	77.3*

* Verification of graduation in process.

Arkansas May Examination

Dr. A. S. Buchanan, secretary, State Medical Board of the Arkansas Medical Society, reports the written examination held in Little Rock, May 11-12, 1936. The examination covered 12 subjects and included 120 questions. An average of 75 per cent was required to pass. Forty-four candidates were examined, all of whom passed. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
University of Arkansas School of Medicine	(1936) 77.8, 78.3, 78.5, 78.9, 79.2, 79.7, 80.3, 80.4, 80.6, 80.8, 80.8, 80.8, 80.9, 81.1, 81.3, 81.8, 81.9, 82.2, 82.3, 82.3, 82.3, 82.4, 82.4, 82.8, 82.8, 83.2, 83.3, 83.3, 83.4, 84.1, 84.1, 84.3, 84.3, 84.3, 84.8, 85.3, 85.3, 85.4, 85.5	(1935)	81.3,
Rush Medical College		(1935)	85.2
University of Tennessee Col. of Medicine		(1933)	81, (1936) 80, 84

Two physicians were licensed by reciprocity and 1 physician was licensed by endorsement from January 11 through March 3. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Washington University School of Medicine		(1894)	Illinois
University of Tennessee College of Medicine		(1932)	Tennessee

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
Johns Hopkins University School of Medicine		(1933)	N. B. M. Ex.

Mississippi June Report

Dr. R. N. Whitfield, assistant secretary, Mississippi State Board of Health, reports the written examination held in Jackson, June 22-24, 1936. The examination covered 12 subjects and included 96 questions. An average of 75 per cent was required to pass. Twenty-six candidates were examined, 22 of whom passed and 4 failed. Seven physicians were licensed by reciprocity. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Tulane University of Louisiana School of Medicine	(1936) 79.2, 81.7, 83, 83.3, 84.6, 86.2, 86.3, 86.8, 88.1, 89.1, 93	(1935)	87.8,
University of Tennessee College of Medicine	(1935) 84.5, (1936) 85.1, 85.8, 87	(1932)	89.8,
Vanderbilt University School of Medicine	84.1, 85.2, 87.7, 90.1	(1936)	84,

	FAILED	Per Cent
Nongraduates *		51, 52.2, 56.1, 56.6

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Tulane University of Louisiana School of Medicine		(1935)	Louisiana
Memphis Hospital Medical College		(1907)	Louisiana
University of Tennessee College of Medicine	(1926), (1933), (1935) Tennessee, (1935) Louisiana	(1916)	Alabama,

* Permitted to come before the board for examination by special acts of the legislature.

Book Notices

Dental Roentgenology. By LeRoy M. Ennis, D.D.S., Assistant Professor of Roentgenology in the Thomas W. Evans Museum and Dental Institute School of Dentistry, University of Pennsylvania. Second edition. Cloth. Price, $6.50. Pp. 351, with 693 illustrations. Philadelphia: Lea & Febiger, 1936.

This book is not only one for the student but one that will be of great aid to the general practitioner. The introductory chapter with its statistics gives one quite a comprehensive knowledge, as well as keen insight regarding the value of dental roentgenology and the relationship that should exist between the dentist and the physician and vice versa. The early chapters give one a thorough understanding of the construction of the machine and the types of tubes; also a description of the electrical terminology, so that the reader knows just what is meant when certain terms are used. Dark room procedure, which is important, is also discussed, as well as the care and precautions to be observed not alone by the operator but also toward his patient. The book also deals with another important phase of roentgenology, that of angulations and the various types of technic for the intra-oral and extra-oral as well as occlusal and bite-wing films; also for stereoroentgenography. What may be seen in one roentgenogram may not be seen in another angle of the same area. The greater part of the book, however, is devoted to dental pathology, with a review of the normal anatomic landmarks of the teeth and jaws as seen in the roentgenogram. One does not realize that many of these landmarks can easily be mistaken for abnormal or pathologic conditions. In the chapters that deal with various dental pathologic conditions, the author gives a definition or a description of the condition; also the etiology, symptoms and roentgenographic observations. These are followed by profuse illustrations covering or illustrating the point in question. As in the first edition, the author clings to certain terms that are obsolete and should be changed; he uses the term premolar instead of bicuspid and refers to mandibular and maxillary molars instead of upper and lower molars.

The Localisation of Sound. By H. E. O. James. Medical Research Council, Reports of the Committee upon the Physiology of Hearing. III. Special Report Series, No. 207. Paper. Price, 9d. Pp. 38, with illustrations. London: His Majesty's Stationery Office, 1936.

If from a source of sound two equal tubes are led, one to each ear of an observer, the sound will be said to be heard in the middle of the head. If one tube is shortened, the sound will be heard on that side even though the source of sound remains the same distance from the observer. Instruments of this character have a practical military significance in that they permit accurate localization of submarines and airplanes. By means of sound-collecting devices the observer "tunes in" the sound of a distant airplane, let us say, and finally getting the sound to appear as if it were in the middle of his head, he is able to calculate with a fair degree of accuracy from what direction it is coming and which way it is going. The question arose as to what the effect of other sounds on an observer so occupied would be on the accuracy of his determinations; and the larger question of protection against industrial hazards in the presence of noise also arose. The problem of "attunement" came up. An observer who localizes a sound as if it were in the middle of his head will not do so if one ear has been exposed to sound for a short time before this. He has become "attuned." The author experimented on the accuracy of localization and on the speed with which it returns after exposing one and both ears to sounds with a number of various types of apparatus. Different kinds of sounds were used. The effect of exposing the observer first to sounds of different intensities and of varying durations and different frequencies, and the effect of the subsequent "attunement" on accuracy of localization, were determined. The greater question of auditory fatigue was considered. Does an observer exposed first of all to a sound in one ear and then bilaterally stimulated refer it to the unexposed ear because the first ear is tired? That is, is auditory fatigue present? If the proper explanation is auditory fatigue, why does the patient suffer from diminution in hearing ability in the opposite unstimulated ear? Apparently auditory fatigue, better called as the author says "experimental deafness," cannot be entirely explained by fatigue of the end organ. There must be, some observers feel, an additional central factor. These and a number of other interesting questions are raised to intrigue the interest of otologists, psychologists and physiologists in the fundamental mechanism of hearing. More valuable than the practical results of these experiments is the feeling that much that is of importance will come in the future from further work in this only recently explored field.

Nouvelle pratique dermatologique. Publiée par MM. Darier, Sabouraud, Gougerot, Milan, Pautrier, Ravaut, Sézary, Clément Simon. Secrétaire général: Clément Simon. Tome I: Table générale des huit volumes du traité. Dermatologie générale. Par MM. J. Darier, A. Civatte, C. Flandin, A. Tzanck. Half-Cloth. Price, 300 francs. Pp. 720, with 220 illustrations. Tome II: Dermatoses parasitaires; dermatoses microbiennes (début). Par MM. H. Gougerot, M. Langeron, A. Lévy-Franckel, A. Louste, G. Milan, P. Pignot, H. Rabeau, P. Ravaut, E. Rivalier, R. Sabouraud. Half-Cloth. Price, 300 francs. Pp. 948, with 555 illustrations. Tome III: Dermatoses microbiennes (suite). Par G. Barbier, L. Chatellier, Mme. Chevrel-Bodin, H. Galliard, H. Gougerot, G. Lacapère, G. Milian, L.-M. Pautrier, L. Queyrat, E. Rivalier, P. Vigne. Half-cloth. Price, 300 francs. Pp. 1,027, with 343 illustrations. Paris: Masson & Cie, 1936.

"The present work is destined to replace the Pratique dermatologique published in 1900 under the direction of Besnier, Brocq and Jacquet, and which, in its time, marked a date in the history of dermatology." Thus begins the introduction to this monumental work in eight volumes. Careful examination of the first three volumes justifies the statement that "the directors of this treatise have undertaken and have realized this task." One notes with regret that of the eighty-nine notable collaborators Paul Ravaut, Audrey, Barbier, Lacapère, Louste, Montlauer, Miget and Queyrat have passed away since the beginning of the gigantic undertaking. The first volume contains a table of contents for the entire eight volumes. One has an opportunity, thereby, to envision the comprehensiveness and the completeness of the work. An alphabetical index will appear in the eighth volume. The books are beautifully bound and are printed on the best of paper, with numerous illustrations done with the most modern technic. One regrets, therefore, that the directors saw fit to include a group of ancient, meaningless drawings on pages 493 to 497.

The first volume comprises a historical review of the classification of the dermatoses, macroscopic anatomy and histology of the skin, physiology, histopathology, lesions of the adnexa, etiology and general pathology. A chapter on diagnosis and another on therapeusis complete the volume.

The second volume opens with ninety-eight pages devoted to the animal parasites by Louste and Lévy-Franckel. The chapter is of such unusual excellence that an attempt was made to find an omission; none but bird scabies was discovered. Sabouraud continues with a chapter on mycoses of the scalp, done as only this great master of the fungous diseases could do it. This chapter is followed by a series of exhaustive articles on all phases of the mycotic diseases by Sabouraud, Rivalier, Pignot, Gougerot, Ravaut, Rabeau and Langeron. If one had no other reference book one could get on well with this volume alone, aided by the lengthy bibliography. The remaining pages in the volume are devoted to a monograph on syphilis by Milian. The only criticism one could make of the monograph is that the bibliography is scanty.

The third volume has the first 200 pages given over to a continuation of the monograph by Milian, followed by a short article by Lacapère on African and Asiatic syphilis. Following this are excellent articles on yaws, leishmaniasis, oriental sore, trypanosomiasis and the fusospirillar infections. The bulk of the volume is taken up by a monograph on the entire field of cutaneous tuberculosis by Pautrier. This chapter is done in a most authoritative manner, well documented and beautifully illustrated. Pautrier has included lupus erythematosus, as he has been a partisan of the tuberculous origin of the disease for thirty years. After an exhaustive analysis of all the views as to etiology, Pautrier says "There remains the tuberculous theory; it is the most logical, the most reasonable, the one which best satisfies the spirit, the one which unites the maximum of probability with the beginnings of proof." The article is brought to a close with an excellent discussion of granuloma

annulare, which has only an "uncertain and debatable connection with tuberculosis." Gougerot contributes a valuable article on leprosy, and Rivalier closes with an excellent and beautifully illustrated chapter on chancroidal infections.

The dermatologic world is greatly indebted to the French school of dermatology for having produced such handsome and valuable volumes. The arrival of the remaining volumes will be eagerly awaited.

Dental Infection and Systemic Disease. By Russell L. Haden, M.A., M.D., Chief of the Medical Division, Cleveland Clinic, Cleveland, Ohio. With a foreword by Dr. Edward C. Rosenow. Second edition. Cloth. Price, $2.50. Pp. 163, with 63 illustrations. Philadelphia: Lea & Febiger, 1936.

By his studies and clinical data, the author evaluates the present status of dental infection in relation to the clinic. He speaks of the education of dentists, physicians and public to the danger of infected teeth as yielding beneficial results, shown by the decreased incidence of pulpless teeth. This is also due to dental advancement in that the dentist is conserving the teeth and their pulps to a greater degree. The volume offers a complete guide for the research worker whose interest may lead him to corroborate the painstaking work of the author and whose conclusions may stimulate further interest in preventive dentistry.

Biologische Wirkungen des Alkohols auf den Stoffwechsel: Ergebnisse experimenteller Untersuchungen in dem von mir geleiteten Laboratorium unter Verwendung der Widmarkschen Mikromethode der Blutalkoholbestimmung über Wirkungen des Alkohols auf den Stoffwechsel, über die Verwertung des Alkohols bei der Muskelarbeit, über Beziehungen des Blutalkoholgehaltes zum Rauschzustande, über Insulinbehandlung der Alkoholintoxikation und die Insulinblockade der Ganglienzellen. Von Adolf Bickel, Professor der pathologischen Physiologie an der Universität Berlin. Paper. Price, 90 pfennigs. Pp. 31. Leipzig: Georg Thieme, 1936.

This summary of the quantitative studies of Professor Bickel and his students is an amplification of a public address recently delivered, and consequently the conclusions and interpretations are given without the evidence on which they are based, which may be found in part in more technical publications. Some of them, at variance with previous observations, require further analysis and experimental verification before they can be unqualifiedly accepted. They are, briefly, as follows: 1. Alcohol frequently, but not regularly, has a specific dynamic effect, increasing the total metabolic rate. 2. The rate of oxidation of the alcohol itself is increased by small doses but diminished by large amounts of alcohol. 3. The presence of alcohol hastens the oxidation of other materials in the body. 4. Alcohol burns faster during muscular work but does not itself serve as a source of muscular power. 5. The effect of alcohol on the blood sugar or on the sugar tolerance curve is not consistent. 6. The normal insulin supply of the body controls the height of the blood sugar without definite effect on the blood alcohol content. 7. The injection of insulin subcutaneously produced a lowering in the alcohol content of the blood, in addition to the reduction in the blood sugar. The lowering of the blood alcohol through insulin is greater with larger doses of insulin and with lower blood sugar levels. 8. With high blood sugar and high blood alcohol concentrations, insulin causes a lowering of the blood sugar without influencing the blood alcohol concentration but may cause a shortening of the intoxication by insulin "blockade" of the ganglion cells. 9. The height of the blood alcohol content, therefore, is within certain liimits no infallible index of the amount of the total disturbance of the nervous system at a particular moment. 10. The insulin treatment of alcoholic intoxication in man may serve as a therapeutic possibility for the consideration of the clinician. The observations discussed are both theoretically stimulating and clinically attractive. Before the classic dictum of Mellanby that the rate of oxidation of alcohol in the body is independent of concentration or external factors is abandoned, however, further work is necessary to demonstrate that the results reported may not, in fact, be explainable on the basis of variable excretion, rather than oxidation rates, and that the differences observed are really statistically significant. It is to be hoped that Professor Bickel and his students will continue their investigations and that other workers may confirm their results before the therapeutic suggestions made are given uncontrolled clinical application.

The International Medical Annual: A Year Book of Treatment and Practitioner's Index. Editors: H. Letheby Tidy, M.A., M.D., F.R.C.P., and A. Rendle Short, M.D., B.S., B.Sc. Fifty-fourth year, 1936. Cloth. Price, $6. Pp. 555, with 154 illustrations. Baltimore: William Wood & Company, [n. d.].

This book has established itself as a classic. It is the work of leading authorities and the fifty-fourth year of publication is a sufficient testimony to its merit. The editors wisely say in the introduction that "a year book must record the proceedings of the previous year like the minutes of a meeting. Minutes contain no implication that the opinions expressed by the speakers are justified or that the conclusions arrived at are correct." The introduction contains a short review of the principal accomplishments of 1935 in various fields of medicine. The scope of the book is not limited to internal medicine but includes also surgery, obstetrics, gynecology, radiology and related subjects. Such diversified themes as diets for athletes, school medical service and industrial diseases have not been overlooked. The handy book is illustrated with numerous charts, photographs, reproductions of roentgenograms, photomicrographs and colored plates. The usefulness of this work cannot be questioned; it should be helpful to the practitioner who desires concise and accurate information concerning recent advances in medicine. An impression gained from a brief review of the book is that the last year offered an unusually large number of comparatively simple new therapeutic methods for a great diversity of ailments. The arrangement of subjects in alphabetical order is open to criticism, as overlapping cannot be avoided in many instances. The editors rendered a distinguished service, particularly to those who for some reason or other cannot avail themselves of library facilities.

The Treatment of Asthma. By F. T. Harrington, M.R.C.S., L.R.C.P. Cloth. Price, 6s. Pp. 112, with 3 illustrations. London: H. K. Lewis & Co., Ltd., 1936.

This small book is published under the ambitious title of the treatment of asthma. With the exception of the first few chapters it is essentially a concise discussion of the general dietary and hygienic aspects of asthma. The author's rationalizations and theories on the etiology and pathogenesis of asthma will find little general acceptance. His idea that "without toxemia we cannot have asthma and treatment which does not include some means of lessening the toxic load is futile" would have been more convincing if he had been more explicit about the toxin or the mechanism by which it acts. That proper food and alimentation is important in the management of asthma will be readily agreed on, but that these are fundamental factors will be seriously questioned. It is unfortunate that many of the author's practical statements are obscured by some of his poorly grounded theories. Had the author been content with dealing with diet and hygiene in asthma he would probably have provided the profession with a concise, usable textbook. There is little else in this work to recommend it to the physician.

Recent Advances in Dermatology. By W. Noel Goldsmith, M.A., M.D., M.R.C.P., Physician to St. John's Hospital for Diseases of the Skin. With foreword by A. M. H. Gray, C.B.E., M.D., F.R.C.P. Cloth. Price, $5. Pp. 522, with 58 illustrations. Philadelphia: P. Blakiston's Son & Co., Inc., 1936.

This is an unusually able summary of the advances in dermatologic knowledge during the last twenty years. The author has emphasized particularly the newer research in immunology and biochemistry as related to cutaneous disorders and gives an impartial presentation of the views of different observers along with a personal commentary. The material is presented in an orderly fashion, beginning with a consideration of such fundamental subjects as the blood vessels and glands of the skin and pigmentations. Of particular value are the chapters on the reticulo-endothelial system, disorders of metabolism, allergy, tuberculosis, fungous infections, filter-passing viruses, cancer and radiant energy. Each chapter is well illustrated and accompanied by a pertinent bibliography. To the practical dermatologist this digest of an enormous amount of research material should be of great value in the scientific study of skin diseases, although it emphasizes anew the increasing complexity of modern dermatology.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Accident Insurance: Death from Preexisting Heart Disease Aggravated by Strain. — The insurance company promised to pay certain benefits if the insured died from "personal bodily injury . . . effected directly and independently of all other causes through accidental means, and which injury causes total and continuous inability to engage in any kind of business or labor." The insured died from heart failure following overexertion. He had a preexisting heart condition described in the record as a "chronic valvular condition that had lasted so long that the valves had become calcified." The cause of death, as stated in the death certificate, was "aortic mitral insufficiency present since childhood," and the contributing cause was given as "acute cardiac dilation induced by overexertion in hauling a boat out of water." In a suit to recover the benefits, the trial court gave judgment for the beneficiary and the insurance company appealed to the Supreme Court of Wisconsin.

That the insured suffered a heart injury while pulling up the boat was undisputed. Assuming the death to have been caused by accidental means, the court said, the question arises as to whether the overexertion can be considered as having caused the death "independently of all other causes." If a disease or bodily condition exists and an accident occurs, to constitute the accidental means the sole cause of an injury it is sufficient if the accidental means would have solely caused some considerable injury had the disease or bodily condition not existed. If no considerable injury would have resulted had the insured not been afflicted with the existing disease or condition, the accidental means cannot be considered as the sole cause of the injury. From the undisputed evidence in the present case, no considerable injury would have occurred in the absence of the preexisting heart condition. The heart condition must therefore be considered as a substantial factor in causing the death. The death was not attributable, concluded the court, solely to accidental means within the meaning of the policy and the judgment of the circuit court for the beneficiary was reversed, with directions to dismiss the complaint. —*Herthel v. Time Ins. Co. (Wis.), 265 N. W. 575.*

Workmen's Compensation Acts: Pneumothorax Attributed to a Strain.—The employee, Delaune, while assisting in lifting a press cover weighing about 300 pounds, experienced a sharp pain in the region of his left lung. The following morning, while on his way to work, pneumothorax developed. Attributing this development to the strain of the preceding day, Delaune sought compensation under the workmen's compensation act of Louisiana. From a judgment awarding compensation, the employer appealed to the court of appeal, Orleans.

Two expert witnesses, on behalf of the employee, testified that the collapse of the employee's lung was due to the strain, which reawakened a dormant tuberculosis. One witness for the employer, on the other hand, testified that the effort in lifting the press cover could not have caused the lung to collapse except "by a very remote possibility." He testified that a person's lung may collapse without any exertion at all, and that, in his opinion, tuberculosis was the sole cause in the present case. If the collapse of the lung had been caused by the exertion, this witness testified, it would have been a total collapse and the employee would not have been able to continue work until the end of his shift as he did. Another expert witness, appearing for the employer, testified that the strain was too remote, in time, from the collapse of the lung to have been its cause and that a person whose lung collapses by reason of injury or trauma would be unable to continue work. After reviewing this testimony, the court was of the opinion that the testimony for the employee must prevail over the testimony of the experts for the employer, who, while expressing the opinion that the strain did not produce the pneumothorax, conceded that it might have done so. The judgment awarding compensation was therefore affirmed, subject to an amendment with respect to the number of weeks during which compensation must be paid.—*Delaune v. Young (La.), 166 So. 149.*

Malpractice: Mistake in Identity of Physician. — An operation was performed on Mrs. McDonald Nov. 23, 1930, for the removal of her appendix and fallopian tubes. Three years later a second operation was necessitated and a piece of gauze was found in her abdominal cavity. Peritonitis developed and the patient died. Attributing the death to the presence of the sponge, which, it was contended, was negligently left in the abdominal cavity after the first operation, suit was instituted against the defendant, Dr. Garnier, alleging that he performed the first operation. The trial court gave judgment for the defendant and the plaintiffs appealed to the court of appeal of Louisiana, second circuit.

The testimony as to who performed the first operation was both conflicting and, to say the least, most unusual. Mrs. McDonald was, according to evidence, a patient of Dr. J. N. Jones, a surgeon, who testified that he did his own surgical work. Neither the patient nor her husband ever had a consultation with Dr. Garnier. There was no request made that he operate, and he never submitted a bill for the operation. Witnesses for the plaintiff, consisting of Dr. Jones and five relatives of the deceased, all testified that Dr. Garnier performed the operation. Against this testimony, however, a physician who assisted in giving the anesthetic and the nurse who assisted in the performance of the operation both testified unequivocally that Dr. Garnier was not present during the operation and that it was performed by Dr. Jones. Furthermore, the evidence was convincing that Dr. Garnier was in a different city at the time the operation was performed and could not physically have participated in it. A preponderance of the evidence, in the opinion of the court, was in favor of the defendant. The judgment of the lower court for the defendant was therefore affirmed.—*McDonald v. Garnier (La.), 166 So. 147.*

Society Proceedings

COMING MEETINGS

American Academy of Ophthalmology and Otolaryngology, New York, Sept. 26-Oct. 3. Dr. William P. Wherry, 107 South 17th St., Omaha, Executive Secretary.

American Association of Obstetricians, Gynecologists and Abdominal Surgeons, Bretton Woods, N. H., Sept. 14-16. Dr. James R. Bloss, 418 Eleventh St., Huntington, W. Va., Secretary.

American Congress of Physical Therapy, New York, Sept. 7-11. Dr. Nathan H. Polmer, 921 Canal Street, New Orleans, Secretary.

American Hospital Association, Cleveland, Sept. 28-Oct. 2. Dr. Bert W. Caldwell, 18 East Division St., Chicago, Executive Secretary.

American Roentgen Ray Society, Cleveland, Sept. 29-Oct. 2. Dr. Eugene P. Pendergrass, 3400 Spruce St., Philadelphia, Secretary.

Colorado State Medical Society, Glenwood Springs, Sept. 9-12. Mr. Harvey T. Sethman, 1612 Tremont Place, Denver, Executive Secretary.

Idaho State Medical Association, Boise, Aug. 31-Sept. 4. Dr. Harold W. Stone, 105 North Eighth St., Boise, Secretary.

Indiana State Medical Association, South Bend, Oct. 6-8. Mr. Thomas A. Hendricks, 23 East Ohio St., Indianapolis, Executive Secretary.

Kentucky State Medical Association, Paducah, Oct. 5-8. Dr. Arthur T. McCormack, 532 W. Main St., Louisville, Secretary.

Michigan State Medical Society, Detroit, Sept. 21-24. Dr. C. T. Ekelund, 35 West Huron St., Pontiac, Secretary.

Mississippi Valley Medical Society, Burlington, Iowa, Sept. 30-Oct. 2. Dr. Harold Swanberg, 510 Maine St., Quincy, Ill., Secretary.

National Medical Association, Philadelphia, Aug. 16-22. Dr. W. Harry Barnes, 1315 North 15th St., Philadelphia, Acting Secretary.

Nevada State Medical Association, Reno, Sept. 25-26. Dr. Horace J. Brown, 20 North Virginia St., Reno, Secretary.

Northern Minnesota Medical Association, Fergus Falls, Aug. 31-Sept. 1. Dr. Oscar O. Larsen, Detroit Lakes, Secretary.

Ohio State Medical Association, Cleveland, Oct. 7-9. Mr. C. S. Nelson, 79 East State St., Columbus, Executive Secretary.

Oregon State Medical Society, The Dalles, Oct. 8-10. Dr. Morris L. Bridgeman, 1020 S.W. Taylor St., Portland, Secretary.

Pennsylvania, Medical Society of the State of, Pittsburgh, Oct. 5-8. Dr. Walter F. Donaldson, 500 Penn Ave., Pittsburgh, Secretary.

Southern Minnesota Medical Association, Albert Lea, Aug. 30-31. Dr. Harold C. Habein, 102 Second Ave., Rochester, Secretary.

Washington State Medical Association, Yakima, Aug. 31-Sept. 2. Dr. Vernon W. Spickard, 1303 Fourth Avenue, Seattle, Secretary.

Wisconsin, State Medical Society of, Madison, Sept. 8-11. Mr. J. G. Crownhart, 119 East Washington Avenue, Madison, Secretary.

Wyoming State Medical Society, Cody, Aug. 24-25. Dr. Earl Whedon, 50 North Main Street, Sheridan, Secretary.

AMERICAN ASSOCIATION FOR THE STUDY AND CONTROL OF RHEUMATIC DISEASES

Third Annual Meeting and Fifth Conference on Rheumatic Diseases, held in Kansas City, Mo., May 11, 1936

LORING S. SWAIN, M.D., Secretary

(Concluded from page 458)

The Differential Diagnosis of Rheumatic Fever

DR. R. A. KINSELLA, St. Louis: The approach to the differential diagnosis of rheumatic fever must begin with a clear recognition of the disease itself. The various features that make up the so-called rheumatic state are in themselves insufficient for diagnosis and may exist in combination even in those conditions which are not rheumatic fever.

There are two features which seem to distinguish the disease in a definite way. The first of these is the rather short duration of the reaction about a given joint, even while the disease continues in other joints. This period of sojourn is usually from three to five days, during which symptoms and signs are definite, although stiffness and indefinite soreness may persist for a longer time. The second and most important feature is cardiac involvement.

Cardiac involvement endows vague symptoms, such as "growing pains," with definite value. Without cardiac involvement, no single feature or combination of features in the so-called rheumatic state makes the diagnosis. With this idea accepted, differentiation from Still's disease, rheumatoid arthritis, gonorrheal rheumatism and bacterial arthritis is possible.

From Still's disease, rheumatic fever differs in many ways, although in the beginning of Still's disease the features may be similar. Acute rheumatic fever in children is usually accompanied by a devastating form of cardiac involvement which is entirely absent in Still's disease. In the latter disease the involvement of joints is tenacious and progressive, leading to permanent deformity, while in rheumatic fever the involvement of joints leads to no structural changes that are lasting.

Early cases of atrophic (rheumatoid) arthritis in young adults may closely imitate the clinical display of rheumatic fever. This is especially true in those cases in which there is fever, and tender red areas about joints, which last only a few days in each location. There is, however, a definite preference for small joints; the course is prolonged and leads eventually to permanent structural deformities; and throughout the prolonged course the heart remains intact. In both Still's disease and atrophic (rheumatoid) arthritis, which many regard as the same disease, subcutaneous nodules occur—a feature that is found also in rheumatic fever.

DISCUSSION

DR. T. DUCKETT JONES, Boston: Because the age groups of rheumatic fever subjects coincides with that of so-called Still's disease, these two offer the greatest difficulty in differential diagnosis. The typical cases of each disease need not be confused, but also it must not be overlooked that the two occur simultaneously. While the latter is not common, it is not unusual to see a child with definite heart disease of the rheumatic fever type and active carditis in progress who also shows definite and progressive joint change characteristic of Still's disease. There are two types of Still's disease which offer difficulty. Occasionally one sees children with fever and severe joint pain, swelling and no evident heart disease, and the patient recovers and is seemingly well. After varying periods there may be recurrences of this episode and the process continues with this story for several years prior to the development of permanent or appreciable joint change. I know of no diagnostic methods that are proof positive of either rheumatic fever or Still's disease in this group, and the diagnosis must rest on the ultimate course of the disease process. A further type of Still's disease offering difficulty in diagnosis is the rare patient with pericarditis early in the course of acute illness. In some such cases evident slight enlargement or hypertrophy of the heart has been observed for a period of several years without evidence of valvular disease, and the subsequent course does not seem to be similar to cases of heart disease as a result of rheumatic fever. In postadolescents and young adults the difficulty of differentiating between rheumatoid arthritis and rheumatic fever may be impossible. Typical cases of either may be easily differentiated, as Dr. Kinsella has noted. Here again the two diseases may occur simultaneously. Transient changes demonstrated by electrocardiogram may show the presence of an active heart lesion, while examination of the joints may show progressive permanent joint damage. Cases of acute polyarthritis in this age group often may be indistinguishable from rheumatic fever and the diagnosis definitely determined only after a long period of observation. Salicylate therapy has not seemed to be of great diagnostic aid. Whether or not rheumatoid arthritis and rheumatic fever are in any way etiologically connected has been a subject for discussion for years and I see no way in which it can be settled at present. While the characteristic life story of the two diseases varies, one showing heart damage and the other progressive joint damage, there are points of similarity which make one wonder whether they may not be to some degree related. However, I have not seen any appreciable instances of rheumatoid arthritis develop in a large group of rheumatic fever subjects followed for a number of years. The suggestion that the variation between the two diseases is dependent on age, that there are strong similarities between the histologic picture of the nodules noted in the two, that both have chronic and recurring courses, as well as the fact that there are certain bacteriologic and immunologic factors which seem to play a part in each, leaves the question of a close etiologic connection muddled. I feel that cases in which there is a suggestion of both diseases should be carefully studied and that this possible relationship will be settled only when the agent of one or the other disease is known and it will be possible to have specific tests. I would make a plea that this society maintain its interest in rheumatic fever. In recent years rheumatic fever has been shown to be a disease with pathologic changes throughout the body; and, while death is usually the result of damage to the heart, there are many other important general factors and it would be unwise to investigate the disease purely from a cardiologic point of view. If physicians will keep open minds and observe large numbers of patients with rheumatoid arthritis and rheumatic fever it may be possible ultimately to solve many of the problems concerning the two separately, and the question of a common etiologic factor.

DR. RALPH H. BOOTS, New York: Dr. Kinsella introduced a group of cases about which little has been said. These cases are occasionally referred to as "focal infection arthritis," not uncommon in older persons, sometimes suspected of being due to infected prostates. This seems to be an entity quite distinct from rheumatoid arthritis. Regarding the frequency of rheumatoid arthritis in older persons, although most patients are affected before 40 years of age, many of these continue with the disease the remainder of their lives, which accounts for its frequency in older persons. The patient referred to by Dr. Snyder was a woman, so the prostate was not a factor.

Differential Diagnosis of Traumatic Arthritis

DR. WILLIS C. CAMPBELL, Memphis, Tenn.: Little interest has been shown in this class of joint disorders, "low grade traumatic arthritis." The etiology is trauma causing organic changes in the articular structures; repeated occupational traumas, overuse or faulty posture with unequal articular pressure. The discussion is confined to the knee joint.

The changes after trauma depend on the intensity of the trauma and the reaction of the individual. The irritating process may involve the synovia, capsule or cartilage. Fluid may occur. Fibrinous adhesions may follow. The villi increase. Beneath the synovia the fibrous tissue reaction may impair circulation, giving a dusky hue to the synovia. Cartilaginous masses of embryonic cells are formed as loose bodies, osteochondritis or synovial osteochondromas. Fibrillation of the articular cartilage causes rough areas over the surface. Osteoporosis of the bone extremities follows every toxic or traumatic irritation. It shows a characteristic mottling of the cavernous extremities. Later hypertrophic changes are induced and osteophytes about the margins of the articulation occur. The pathologic process differs in that granulations, tuberculosis, round cell infiltration and infection are absent. The symptoms of pure traumatic

arthritis may be pain, swelling or effusion; again it may appear perfectly normal. Crepitation of a thickened capsule or villi or friction fremitus, as in pleurisy, may be present. There is no heat. Motion may not be limited. The history of immediate symptoms following trauma in the absence of other factors may determine the diagnosis. Only in those under 30 can one be fairly certain that a process is entirely traumatic.

Traumatic arthritis in which trauma is a factor but associated with other clinical and pathologic entities forms the largest group in which trauma plays a practical rôle. Such patients are approaching middle age. Hypertrophic arthritis is frequently the complicating agent. Trauma may induce persistent symptoms when hypertrophic changes are present in the spine. The question between trauma and previously existing disease arises in medicolegal work. "Uncomplicated traumatic arthritis exists only as a definite clinical entity in the young, male athletes most commonly. The pathology is definite. When other affections as hypertrophic arthritis, gout, syphilis, tuberculosis are present and trauma occurs, as careful a differential diagnosis is required as if no trauma had occurred. Biopsy may be the only way to be sure."

DISCUSSION

DR. CHARLES L. LOWMAN, Los Angeles: One thinks of traumatic arthritis as local or remote, with reactive changes in the immediate region of injury, in or near a joint, or in one or more adjacent or remote joints to which the jar or stress has been transmitted at the time of injury. Changes may occur in the spine when the major trauma is in the legs or pelvis, or may be in the shoulder, the result of a fall on the hand, injuring the wrist area. Traumatic arthritis is characterized by capsular thickening, irritation of synovial fringes, contusions, cracks or compression reaction in articular cartilages, interference with function, pain, tenderness, muscle atrophy, swelling, and often crepitation. Roentgenograms often show cartilage changes, spurring or lipping, and increased density of joint margins at the area of injury with adjacent atrophy not shown on the opposite side. At later stages an osteoporosis below the lesion may also be shown, which may be just adjacent to the joint or may involve a more extensive area; for instance, the whole wrist and hand when the lesion is in the elbow or shoulder, or the whole foot after leg fracture or a sprained ankle. In a young person, definite relation to specific trauma without arthritis in other localities is a great help in diagnosis, yet the coexistence of arthritis in other locations is no criterion of the nonexistence of a real traumatic arthritis. In compensation cases especially beyond the age of 40 the degree of static stress with incident moderate chronic arthritis, or the presence of definite rheumatoid or osteo-arthritic changes, makes it difficult to judge the worker's status and compensability. I feel that one is justified in giving the benefit of the doubt to the worker if he has been continuously employed and has given continuous service until interrupted by the injury. Dr. Campbell correctly points out that osteoporosis is probably due to a sympathetic nerve upset, which may occur especially in the presence of constitutional tendencies, such as glandular imbalance. Its occurrence with traumatic arthritis greatly prolongs the convalescence, giving a sensitive painful member, which may be made worse by careless or improper handling. One must not be confused as to acuity of symptoms when the patient may have had faulty physical therapy, such as the improper use of heat, either too deep or too prolonged. Pain and spasm are reduced by heat and the patient feels a sense of relief, but many use the faulty technic of following it with active movement. The heat congests the area involved, enlarging the fringes. Unless they are drained and lessened in size by elevation and by depleting massage, movement will pinch and irritate the joint constituents enough to produce more swelling and tenderness, resulting in continuing spasm. Thus the ignorant may produce the very condition they are trying to remedy. One should not only make a diagnosis of the specific lesion but continue to diagnose the status at various intervals. When a technician reports that limitation of motion at a given point has not changed for two weeks, new roentgenograms should be taken, diagnosis of the new status made and treatment altered. If physicians will keep in mind the picture Dr. Campbell has shown of what is occurring in the traumatized joint, they will not go wrong in treatment, and much time and cost will be saved for all concerned.

Differential Diagnosis of Tuberculous Arthritis

DR. FRANK D. DICKSON, Kansas City, Mo.: Tuberculous arthritis produces 20 per cent of the handicapped children in this country. It has a high mortality rate estimated as 20 per cent. There are three types:

1. Monarticular, the most usual and accepted type. Diagnostic criteria depend on the stage of involvement. There are two stages: an early stage without radiologically visible osseous foci and a later stage with definite changes. Early diagnosis is important because cure (if ever) is possible with function. Local objective signs and the laboratory examinations, negative Pirquet and Mantoux tests and positive guinea-pig inoculation are trustworthy. There is no characteristic x-ray picture. Later, with chronic joint involvement, and remissions, biopsy and x-ray examinations show uniform thinning of the cortex of the bone, destruction or thinning of the articular cartilages, decalcification of the bone ends, lack of new bone formation, presence of foci of bone destruction (epiphyses) and failure of the destructive process to extend along the shaft of the bone but tending to involve the neighboring joint.

2. Multiple tuberculous arthritis. The tuberculous process occurs in several joints in from 3 to 13 per cent of the cases. There is usually an interval in the involvement; more than three intervals is unusual and against tuberculous arthritis.

3. Tuberculous polyarthritis. Poncet in 1897 described the so-called tuberculous rheumatism. The two forms were acute and subacute polyarthritis resembling rheumatic fever, and a chronic form resembling atrophic and hypertrophic polyarthritis. This type is rarely recognized and the literature is unconvincing. Kubirschky's six diagnostic points are refractoriness to salicylates, no endocarditis, presence of other tuberculous disease, positive tuberculin tests, positive animal inoculation from synovial fluid and predominance of mononuclear cells in the synovial fluid. So far there is little proof of the existence of this type of arthritis. Diagnosis of tuberculous joint disease is based on the history, local evidence and laboratory observations. Roentgenograms are of value only in the later stage.

DISCUSSION

DR. J. ALBERT KEY, St. Louis: Chronic progressive monarticular arthritis in the child is considered tuberculous arthritis until it is proved otherwise. I have never been concerned about the early diagnosis of tuberculous arthritis. I do not think it matters whether a tuberculous joint is diagnosed this month, next month or next year, and the reason is this: In this country I have not seen a single instance in which a large weight-bearing joint that was tuberculous was cured with useful motion. I am concerned not with the early diagnosis but with the positive diagnosis. Just as soon as I am sure that the joint is tuberculous I make it my purpose to eliminate that joint by arthrodesis. That is the only way I know by which the patient can be cured of tuberculosis. If a good bony ankylosis is obtained he is cured. If it isn't, the patient has a tuberculous joint as long as he lives. There are two ways of making the diagnosis in the early stage. One is aspiration and injection into a guinea-pig. I think Dr. Dickson is right about subcutaneous inoculation. I have always used intraperitoneal injection and I have had two negative guinea-pigs from a joint which later was proved to be tuberculous. The other is biopsy. I have looked at many synovial membranes and when I find a typical tubercle I think it is tuberculosis. When I do not find typical tubercles, I do not know. To treat the case expectantly is hard, because most of these cases are in children and the parents want the child cured. If it is tuberculosis, the next thing to do is to pick a time to operate on the child or adult. The most important thing in the diagnosis of tuberculosis is the differentiation of a tuberculous joint from a pyogenic joint, strange as it may seem. If one operates on a fulminating tuberculous joint and tries to do an arthrodesis, one is apt to get into trouble. I have done it twice and both patients died, one before amputation and one after. There can

be all gradations in a tuberculous joint, from a simple synovitis with practically no thickening of the synovial membrane and negative x-ray signs which may persist over a period of years to a fulminating joint that is hot and exquisitely sensitive. The usual type is the one that is moderately sensitive with a doughy feel, a thickened synovial membrane, and not much fluid in the joint. I have performed synovectomy on two occasions for rheumatoid arthritis and when the sections came through I found it was tuberculosis. The symptoms recurred in a few months and an arthrodesis was done. On another occasion I drained an acutely involved elbow for a presumably pyogenic infection and the sections showed tuberculosis. The tuberculous rheumatism of Poncet, as I recall it, is a tuberculosis without tubercle bacilli and without tubercles. I have never seen a case. I do not think it exists. I think Poncet was a man who was seeing rheumatoid arthritis but was so hipped on tuberculosis that he called his rheumatoid arthritis tuberculous arthritis.

DR. EDWIN W. RYERSON, Chicago: Yesterday I saw in Billings Hospital of the University of Chicago with Dr. Phemister a woman of 50 odd years, with typical severe, old arthritic manifestations, which are so familiar. Her hands, elbows and knees were swollen. She had been that way for years. A few weeks ago both elbows developed swelling just above the joint. Phemister cut into both of these and proved that they were tuberculous. After investigation they found a tuberculous process in the neck. I have seen two cases of pneumococcic arthritis in the joint, one in a child and the other in a woman. After evidently being proved pneumococcic, they ran a prolonged course and were later found to be tuberculous without tuberculosis in any other portion of the body. Dr. Dickson's paper is timely, because all of us are faced by joints which appear to be arthritic and are later proved to be tuberculous. The converse is also true.

DR. FRANK D. DICKSON, Kansas City, Mo.: Five years ago I would not have said what I did. The experience of years has caused me to hold different opinions from those I have held in the past. For example, I have had under my care three cases of synovial tuberculosis of the knee, fairly well proved and cured with function. One of these patients—a boy—rowed on the Princeton crew several years ago, which would indicate a functioning knee. I had the patient under observation from the time he was a young boy; moreover, during the course of his disease he was seen by other surgeons and the diagnosis of tuberculosis was confirmed. Girdlestone reports a recent series of early cases of tuberculosis and recovery with function. These cases were carefully diagnosed. Girdlestone believes from his experience that better results in early cases of joint tuberculosis are not being obtained because they are not being recognized early enough and are not kept at rest long enough. It is my conviction that there has been a small but definite percentage of tuberculous joints in which the diagnoses were made early and recovery has occurred with function. If a tuberculous joint is seen in a child 2 or 3 years of age, one is not going to fuse that joint; it must be treated conservatively until such a time as one can do a fusion successfully. With this method, healing with function may be secured once in a while.

Differential Diagnosis of Gonococcic Arthritis

DR. STAFFORD L. WARREN, Rochester, N. Y.: Gonococcic arthritis differs in the main from the large group of arthritides classified as infectious arthritis only in that the etiologic agent is known and can be identified in suitable cases. There is one major clinical syndrome which is of diagnostic importance aside from the discovery of the gonococci and that is the rapidity with which the acute process and the atrophy of the bone and muscle and tendon structures progress.

The diagnosis is made on a history of exposure followed by a yellowish discharge from three to twenty days later accompanied by the sequelae of painful urination and other conditions. Involvement of the prostate or tubal structures may follow the onset of this discharge by a few days or weeks or months, and coincidental with this or at some later date any joint or group of joints may develop symptoms of acute disease. A carefully taken history usually reveals transitory involvement of many joints at the onset over a period of several days followed by the acute major involvement of one or several joints or nearby structures. It is not unusual for the process to flare up successively in other joints. It is not infrequent for the major damage to involve a joint traumatized previous to infection.

Examination shows a bluish red, hot, tender joint not very different in appearance from that due to a nonspecific joint except that it produces unusually severe symptoms. The process may, however, be restricted in some cases entirely to the tendon sheaths or bursae around the joint or to the muscle and fascia near by. The atrophy progresses rapidly from the onset. The discharge from the genito-urinary tract may show positive smears in about 40 per cent and positive cultures in about 60 per cent of all suspects, although in these acute cases the smear and cultures are usually positive. Joint, bursa and tendon sheath cultures in the early acute stages yield a growth of gonococci in 80 per cent. Later the joint fluid is sterile. Complement fixation tests on the blood are negative for from two to six weeks. When the patient has recovered, a complement fixation test may become negative within six to eighteen months, although some may still be positive four years after recovery. Skin tests are still in the experimental stage but may be significant if that material is freshly made. The toxin of the gonococcus produces an erythematous reaction in the skin in the absence of the disease.

In the absence of a history of exposure and negative smears and cultures, the positive blood complement fixation test is probably a significant aid in the diagnosis. I suggest making this test on the joint or bursa fluid also, although any body fluid is probably positive in active cases. With a previous history of infectious arthritis and a recent gonococcic infection with flare up of a joint, the situation is very complicated. A nongonorrheal arthritis may flare up because of the intoxication arising from the gonococcic infection without gonococcic invasion in the joint. Joints damaged probably offer fruitful soil for the gonococci. The acuteness of the reaction and the rapidity with which the joint surfaces are damaged and the rapid onset of the atrophy, far out of proportion to the changes that usually accompany ordinary arthritis, are suggestive points in differential diagnosis. The diagnosis of course cannot be established clearly without the cultivation of gonococci from the joint or synovial fluid.

The manner in which the cultures are made is of vital diagnostic importance. In women, cultures should be taken from the discharge from the cervix during the last two days of and the two days following the cessation of the catamenia. In males without discharge, after careful prostatic or urethral gland massage, the urethra should be washed out with sterile saline solution, cultures of which should be taken.

The radiographic appearance of diffuse atrophy and the tremendous extent of the bone destruction, considering the short duration of the disease, is characteristic. Chronic cases show extreme deformity and capsular thickening, not commonly found in the case of infectious arthritis. When a growth of the gonococcus is not obtained from the joint fluid and in the absence of a good history of gonococcic infection, the patient should be investigated for brucellosis, tuberculosis, typhoid, syphilis (secondary) and low grade staphylococcic and streptococcic infections. On failure to demonstrate any of these, the diagnosis by exclusion is probably infectious arthritis (nongonorrheal).

The fallopian tubes may be sealed off and act as foci for years in the absence of evidence of disease in the lower part of the birth canal. The complement fixation test is of assistance. Chronic prostatitis with an occasional yellowish discharge or bleeding after urination may be due to a small residue of gonococci. Old infected structures and glands in the urethra of both sexes and Bartholin's glands may act as foci. Secondary invaders left as residual foci may help in setting up the syndrome of nongonococcic infection of the genito-urinary tract. Such secondary invaders may persist for years.

The febrile reaction is mild in gonococcic infections but the pallor and intoxication and prostration are excessive. Electrocardiographic changes (prolonged PR interval up to 0.21 second) occur in about 5 per cent of all cases. These subside later and are probably due to the gonotoxin. The extreme dysfunction of the quiescent joint may be due in part to the destruction of its surface but in general is due more to the inflexible connective tissue granuloma infiltrating the capsule and other structures surrounding the joints, bursae, tendons and muscles concerned.

DISCUSSION

DR. C. B. FRANCISCO, Kansas City, Mo.: I tell medical students that gonorrheal arthritis is one thing about which they need to know the clinical symptoms and story, for the reason that no matter how carefully the laboratory work is done there is a large percentage of cases that cannot be proved by laboratory methods the first time. I use that to illustrate the point that clinical medicine is ordinarily apt to be sufficient. The examination and a positive history or the finding of the gonococcus is positive proof, but it is very difficult to get a proper history. The clinical symptoms are characteristic. The extreme pain without much prostration and without much loss of weight is characteristic when preceded by this floating type of joint involvement. The pain is severe and it is extreme, and yet these patients do not lose a lot of weight. The appetite is good and they do not have much fever. The most important point in diagnosis is to think about it. One never diagnoses a thing that one does not think about, no matter how trivial the case may be.

DR. J. ALBERT KEY, St. Louis: Gonorrheal arthritis usually begins as an acute arthritis, but not always. A chronic low grade synovitis is seen which is not very painful and is due to gonorrhea; also the group is seen which I am trying to separate out at the present time, chronic polyarthritis which is due to the gonococcus but clinically rheumatoid arthritis. Most cases of gonorrheal arthritis are cured by fever therapy. If a patient with arthritis of unknown etiology is put in a cabinet, the temperature raised to 106 or 107 F. for four or five hours and he gets well, that is good evidence that the case was one of gonorrheal arthritis. I think that in the future I shall submit certain patients to fever therapy as a diagnostic procedure and if the arthritis is due to the gonococcus the patient will be cured by the test.

DR. MAURICE F. LAUTMAN, Hot Springs National Park, Ark.: Dr. Warren has correctly stressed the ease with which the acute type of gonorrheal arthritis can be diagnosed. However, the differential diagnosis between gonorrheal arthritis and ordinary atrophy or rheumatoid arthritis is at times quite difficult, particularly if nongonorrheal foci of infection are present. In the zeal for eradicating the obvious infective foci, the possibility of a concomitant, postgonorrheal infection is frequently overlooked. Examination of the prostate and prostatic secretion has given a great deal of information. The cultural evidence is usually negative, particularly if the arthritis occurs long after the original infection. There are more or less typical subacute cases of gonorrheal arthritis in which the prostatic smears are negative bacteriologically. In these cases the only observation to which any importance can be attached is the presence of pus cells in the prostatic secretion, particularly by examining the fresh secretion under the high power field. The finding of ten or twelve cells per high power field is enough to incriminate the prostate as a focus of infection, but the finding of gonococcus either in stained specimens or in cultures is necessary to establish definitely a gonococcus foundation for the arthritic condition.

DR. STAFFORD L. WARREN, Rochester, N. Y.: First I should like to answer Dr. Key that fever therapy is not a diagnostic procedure. What can be done with infection by known strains of gonococci that will stand forty hours of heating at 41.5 C. and not be cured? About the prostate, I meant to infer that secondary invaders may be left, that the gonorrhea may be gone and yet the prostate be the focus of infection. I think that some of these patients under ordinary conditions still harbor gonococci, and one can demonstrate them if a concerted search is carried on, especially if dyes are used to identify one or two colonies, which might be missed on a plate, because the plate is crowded with streptococci and staphylococci.

The Diagnosis of Gout and Gouty Arthritis

DR. PHILIP S. HENCH, Rochester, Minn.: The diagnosis of gout is often missed. The conservative view is so prevalent that gout is called rheumatic fever and atrophic, hypertrophic or traumatic arthritis. In a hundred cases of gout an average period of fifteen years had elapsed from the first attack of gouty arthritis to the first diagnosis of gout. Gout is not properly understood. Several hundred cases of typical tophaceous gout and similar cases of pretophaceous gout were studied. Gout and gouty arthritis are not synonymous. There is more to gout than the joint symptoms. The first attack, usually after 40, is sudden, lasting from three to seven days, and completely disappears. Any joint may be affected. A year or two later the second attack lasts from seven to fourteen days. The tempo and severity increase, attacks coming every few months. From monarticular they become polyarticular. The diagnostic point of value is the complete recovery from the individual attacks. From five to forty years (average twelve) after the first attack a change occurs: joints no longer recover; the condition becomes chronic. This is the second stage of attacks and remissions. Finally exacerbations cease, the joints are painless, and the extremities are misshapen with tophi.

Tophi are the one pathologic criterion of gout. The hyperuricemia is first acute and transient, then chronic. It becomes more obvious later even between attacks and finally is always present. Tophi are rare in the first attacks in phase 1, are more common in phase 2, and are constant in period 2. Periarticular fistulas occur as in tuberculosis. The urate crystals must be removed and examined, because the tophi resemble subcutaneous fibrous nodules of fibrositis and atrophic arthritis. Bone is often replaced by urate deposits. Similar areas are seen in atrophic and hypertrophic arthritis and are therefore not pathognomonic of gout. When the characteristic features (podagra, hyperuricemia, tophi, erosion) are present the diagnosis is highly probable. If the pattern is distinctive for gout in onset, recovery, recurrent attacks, even without tophi, the diagnosis is almost assured. It is not like other arthritis, which is chronic from the start without remissions.

Rheumatic fever, intermittent hydrops, periarticular fibrositis, psoriatic arthritis, arthritis with ulcerative colitis or hemophilia, and recurrent subdeltoid bursitis, each has distinctive features from gout, although they have remissions.

If the first attack has no pattern, certain things are suggestive, as sex, age, season of the year, speed of onset and development, severity of the pain, joints involved, appearance of the joints, site of tenderness, duration and recovery. Certain renal lesions in mature cases are of diagnostic value. Ninety-eight per cent of patients are males. Gout is rare before 35 years but is the commonest form of acute arthritis among men over 40 and should be first thought of if gonorrhea and acute trauma are excluded. The attacks are mostly in spring and fall and between 2 and 7 a. m. The onset is rapid and reaches a maximum in two days. The pain is excruciating. The area is hot and bluish red, not clammy, cold and bluish white as in atrophic arthritis.

Trauma, dietary indiscretions, exposure, postoperative days, liver therapy, ketogenic diets, salyrgan, ergotamine tartrate or insulin may start acute attacks of gout. This is not true of atrophic arthritis.

Gout involves extra-articular and intra-articular tissues; hence tendinitis and olecranon bursitis are almost diagnostic of gout as opposed to atrophic or hypertrophic arthritis. Visceral gout is not proved except in the kidney, where urate stones or gravel are frequent in period 2 and occasionally in period 1. Gout should be suspected with renal colic or nephritis.

Gout is still with us. Its rightful incidence is from 5 to 8 per cent of cases in an arthritic clinic.

DISCUSSION

Dr. L. Maxwell Lockie, Buffalo: It seems that gout is more common in certain localities of the United States than in others. Around Buffalo and western New York State a fairly high percentage of gouty patients are seen in the average run of arthritic patients. In the greatest number the diagnosis can be strongly suspected because they present a typical history pattern. This is apparent after a few minutes' conversation. The blood uric acid is above the normal range in the big majority. It is well for one to be suspicious of gout in all male patients who have arthritis in whom there is some evidence of kidney insufficiency. Concerning therapeutic tests, no drug is so specific as colchicine, which acts so well to abate an acute attack. It has been observed that patients with gout are likely to develop an exacerbation if a high fat diet is given. With a change to a high carbohydrate diet the symptoms subside in from twenty-four to forty-eight hours.

Dr. Edwin P. Jordan, Chicago: I should like to ask Dr. Hench two questions. First, Does he think gout may start in the second stage without an attack of acute arthritis? I have had patients who had exacerbations of arthritis which at the time answered all the other criteria of gout but which did not let up between attacks. Second, Does he think the few cases of gout in families are on a hereditary basis?

Dr. M. Henry Dawson, New York: Since the appearance of Dr. Hench's paper several years ago I have looked for cases of gout in the clinic but only rarely have they been encountered. One, of course, sees more cases in private practice. However, I have wondered whether there may not be a geographic factor which may account for the varying frequency of gout in different parts of this country. It is well known that the incidence of gout varies greatly in different parts of Germany and Austria.

Dr. R. Garfield Snyder, New York: I agree with Dr. Dawson that, if a high uric acid is considered an indication of the presence of gout, typical gout is relatively rare in New York City. I have seen only four cases of true gout in the last five years and only one case of tophi in fifteen years. In these four cases of gout over a period of five years the uric acid figures varied between 3.5 and 6.6 mg. per hundred cubic centimeters of blood, but as a rule the uric acid remained between 3.5 and 5 mg. I have seen a large number of cases in which, from the history and appearance of the patient, one cannot help suspecting gout. These patients have usually been on self-imposed diets with rigid restriction of red meats before coming for examination, and for that reason their blood uric acid figures are often within the normal limits. These I classify as atypical gout. Is it not reasonable to assume that a blood uric acid of from 3.5 to 5 mg. in cases of this type is indicative of or presumptive evidence of the presence of gout? I should like to ask Dr. Hench what method he uses to determine the amount of uric acid and what in his opinion is the lowest figure at which a case could be classified as gout. I have seen a few cases in which an acute attack of gout has been induced by the consumption of an excessive amount of sweets. Had Dr. Hench had any similar experience?

Dr. J. Albert Key, St. Louis: I should like to ask Dr. Hench whether because a man has recurrent attacks of pain in the feet one should consider it a case of gout, or does he have other evidence? Naturally, since gout is so rare in the East and in St. Louis and is seen so frequently in Rochester, I suspect that most of his cases are not gout at all but are merely patients with foot strain.

Dr. Russell L. Haden, Cleveland: In a small group of patients in our urologic service who came because of prostatic obstruction, four were immediately relieved by relief of the back pressure on the kidneys. Uric acid should be considered whenever prostatic obstruction is present.

Dr. Philip S. Hench, Rochester, Minn.: When a patient comes with a history of a number of attacks of acute arthritis, with complete remission, but who has reached the stage where his attacks last six, eight or ten weeks, and when after a few days of a regimen of value only in gout he is running around entirely free from pain, regardless of the presence or absence of tophi, what else can we call it but gout? We have had this experience repeatedly, often with cases of tophaceous gout, which I believe would be accepted as true gout even in New York or St. Louis. The factor of heredity in gout is probably important, but it is not of much help in diagnosing gout in our American patients, for it is rare to find one who knows of any gout in his family. Regarding age incidence, gout does occasionally appear in young adults and from Europe come reports of gout in male children, but, in the majority of our cases, acute gouty arthritis first appeared after the age of 30 or 40 years. I believe that the fewer cases of gout in women included in any one series, the more accurate the diagnoses of gout probably are, and if an investigator states that many more than 5 per cent of his patients with gout are females, his criteria of diagnosis are open to question. In one German series of about 300 cases, about 35 per cent of the patients were females. In several hundred cases of gout seen at the Mayo Clinic, only three patients with tophaceous gout and about fifteen with presumptive (pretophaceous) gout were women. In each case the history was the same as that for males: recurrent attacks with complete remissions. At the clinic a normal concentration of uric acid in the blood is considered to be less than 4 or 4.5 mg. per hundred cubic centimeters (Folin method, 1930). Many patients with early gout have a normal concentration of blood uric acid, and there are other causes for hyperuricemia than gout. Quick recently summarized them as follows: states in which ketosis arises, such as in fasting, in severe diabetes and on a high fat diet; states in which an excessive accumulation of lactic acid may arise, such as in eclampsia, chloroform poisoning, pneumonia, circulatory failure and various other conditions of anoxemia, or with lactic acid feeding; after ingestion of excessive amounts of sodium bicarbonate; in severe renal disease, and after administration of benzoic acid, phenylacetic acid and numerous other aromatic acids that decrease uric acid excretion. To this list should be added leukemia and polycythemia. In most series of carefully studied cases of gout, tophi have been found at any given time in only about 40 to 50 per cent. It is foolish, however, to wait on pathologic proof (tophi) for a diagnosis of gout. If one is content only with a pathologic diagnosis, that is almost analogous to waiting for a stroke before diagnosing arteriosclerosis, or for a uremic convulsion to make a diagnosis of nephritis. We have used the provocative (high fat, low carbohydrate diet) test for gout proposed by Lockie and Hubbard. It is useful but not consistently positive. When definite provocation is obtained, unexplainable on other grounds, gout is present in all likelihood, since this test diet does not seem to aggravate cases of atrophic or hypertrophic arthritis. It should be settled whether it is necessary to obtain ketosis before the diet will provoke gout. I have seen several cases in which unmistakable acute gouty arthritis developed while patients were on a ketogenic diet for the treatment of urinary infection with colon bacilli. I cannot confirm Dr. Snyder's experience. I have not seen gout provoked by candy or other excess of carbohydrates. According to Lockie's experiments and the opinion of Quick, an excess of carbohydrates should benefit gouty patients and tend to prevent attacks. An exception might be a patient with a double metabolic fault—one with gout and diabetes. When a gouty patient consistently fails to respond to a regular gout regimen, adhered to faithfully, experience has led me to hunt for some other metabolic disturbance complicating the gout, such as latent or unsuspected but active diabetes or an abnormality in thyroid function. I have studied several patients with both diabetes and gout in the past two years.

Differential Diagnosis of Periarticular Fibrositis and Arthritis

Dr. Charles H. Slocumb, Rochester, Minn.: Fibrositis is the commonest form of acute or chronic rheumatism. Statistics of the British Ministry of Health show that 60 per cent of 2,500 insured patients with rheumatic disease had fibrositis. It occurs in association with gonorrhea, gout, rheumatic fever and atrophic arthritis but its real cause is not known. It is believed to be due to some unidentified infection or toxin.

A tentative classification based on etiologic grounds might be: 1. Primary fibrositis independent of any other disease due to infection or toxemia—nonspecific fibrositis. 2. Secondary (fibrositis) to some known cause, as trauma, gonorrhea, rheumatic fever, gout or influenza. The clinical and pathologic features are still incomplete.

Primary fibrositis is anatomically classified thus: 1. Intramuscular fibrositis, or "muscular rheumatism." 2. Periarticular (capsular) fibrositis. 3. Bursal fibrositis, "bursitis." 4. Tendinous fibrositis, "tenosynovitis." 5. Perineural fibrositis, "sciatica." These may have a common pathologic basis.

The first stage is truly inflammatory. The second is indurative with subcutaneous nodules and local thickenings of fibrous tissue. In the third stage the induration goes or remains as painless nodules with contractures. Intramuscular and periarticular fibrositis are common types. Slocumb finds that a fourth of his primary cases are intramuscular and a fourth periarticular. Lumbago, torticollis, pleurodynia are examples. Periarticular (capsular) fibrositis is mistaken for atrophic arthritis because it is indefinitely associated with use of the capsule or pressure on it and thickening occurs without x-ray evidence. The chief symptoms are stiffness on rising and in damp weather, and fatigue without any essential abnormality. Nodules may appear over the elbows, the knuckles, and sacro-iliac or occipital regions. Vagrancy of symptoms is characteristic of fibrositis and it may leave no deformity as compared with arthritis. Fibrositis does not attack the joint cavity but it often occurs with infections, arthritis, synovitis, chondritis and osteitis. The clinical incidence of fibrositis and atrophic arthritis are similar in age, onset, sex, bodily types affected and prodromal symptoms.

Atrophic arthritis is, however, polyarticular. There is articular tenderness, the stiffness is objective as well as subjective, muscular atrophy is common and swelling is present with fluid in the joint cavity. Not one of these is characteristic of fibrositis. Arthritis has few complete intermissions. Exercise makes it worse; its symptoms are constant, more fixed and chronic. There are more systemic manifestations, as fever, tachycardia, lowered blood pressure and loss of weight in atrophic arthritis than in fibrositis. Fatigue and nervous exhaustion because of continued activity are marked in proportion to the objective evidence of disease in fibrositis. Sixty-two per cent of Slocumb's patients with arthritis lost weight, 47 per cent lost more than 10 pounds (4.5 Kg.); only 7 per cent of those with fibrositis lost more than 10 pounds. Of the 100 patients who had fibrositis, seventy-eight, who had suffered a total of 284 years of their disease, presented no intra-articular roentgenographic alterations, although thirty-seven patients were 45 years of age or older. Hypertrophic arthritis was coincident in 22 per cent of the cases. Even after twenty-five years of periarticular fibrositis, the roentgenograms were negative. In contrast, in 84 per cent of cases with atrophic arthritis there were definite roentgenographic alterations. Although half of the 100 patients had had their disease less than a year, only 14 per cent of the entire group gave negative roentgenograms. The greatest laboratory differences were observed in the sedimentation rate. In fibrositis it was normal in 73 per cent, slightly altered (from 16 to 25 mm.) in 16 per cent, significantly altered (from 25 to 32.5 mm.) in only 11 per cent. It was never more than 32.5 mm.

In atrophic arthritis the average rate was 71.5 mm. Although 25 per cent of the arthritic patients had had their disease less than six months, only 3 per cent had normal rates. Only 6 per cent had rates between 16 and 25 mm.; 91 per cent had rates more than 25 mm. In 67 per cent the rate was more than 50 mm. and in 23 per cent it was between 100 and 150 mm. High rates were noted early in atrophic arthritis. Blood counts were of differential value only in the concentration of hemoglobin in fibrositis. Five per cent were less than 13 Gm. in atrophic arthritis. Forty-two per cent were less and 19 per cent less than 12 Gm.

The differential diagnosis between fibrositis and atrophic arthritis depends, then, on finding synovial hydrops and roentgenographic changes with inflammation in the joint in arthritis. Fibrositis is extra-articular, characterized by arthralgia, stiffness and periarticular thickening. Indirect evidence is afforded by the sedimentation rates of erythrocytes, and the estimation of hemoglobin and the weight curve is significant. The differential diagnosis in favor of periarticular fibrositis is made on the persistence with which evidence of intra-articular disease remains absent.

DISCUSSION

DR. PHILIP S. HENCH, Rochester, Minn.: If gout in America is a forgotten disease, fibrositis is an unknown disease; at least it is not known by that name. The disease is widespread in England and America, but little is written about it in this country and the term "fibrositis" is practically unrecognized here. In the three F volumes of the Surgeon General's *Index Catalogue*, fibrositis is unlisted as such in two of them; in the other volume (volume 5, third series) there are only fourteen articles on the subject. Appearing between 1912 and 1922, all but two of these reports came from England. What, then, is "fibrositis"—a new disease or a new name for an old disease? The term was introduced in 1904 by Gowers and by Stockman to indicate an inflammatory hyperplasia of white fibrous tissue anywhere in the body. The several anatomic forms of this disease have been wandering around, separate and unclaimed, hunting for their common parent. Some of these anatomic forms have long been called by Osler and others "indurative headaches," "cephalalgia," "capsular rheumatism" or "pleurodynia." A newer term is Albee's "myofasciitis," which condition so commonly affects the lumbar and lumbosacral areas. The intramuscular form is the layman's "muscular rheumatism," the general practitioner's "myositis." But these are poor terms and less accurate than "fibrositis" because the disease does not primarily affect muscle cells themselves but is an interstitial, not a parenchymatous, disease of muscles. The obvious outward evidence of this is the lack of significant muscle atrophy in primary fibrositis. At first the clinical features of periarticular fibrositis (the jelling phenomenon, pain in stretching the capsule, the seasonable and weather effects, the vagrancy and variability in the pain, and other features) may seem vague and indefinite, but careful attention to the oft repeated story will show the features to be consistent and sufficiently distinctive so that the disease can be differentiated from "arthritis," which the uninitiated call it, and from "nervous exhaustion," which the unsympathetic are apt to call it. Varying degrees of chronic nervous exhaustion and fatigue are practically always present, but the exhaustion is part of the disease—a symptom of fibrositis, just as another type of chronic nervous exhaustion is a symptom of hyperthyroidism. The patient with periarticular fibrositis at first usually gets little sympathy. He may complain bitterly but he looks well, his physical examination, laboratory tests and roentgenograms are generally quite normal, and his joints are undeformed and freely movable. It is then that his condition is apt to be called just "neuromuscular pain" or "psychalgia." These anxious, unhappy patients continue on their aching but undeformed way, almost more annoyed than pleased that the "deforming arthritis" which they so fully anticipate forever seems to be postponed. If the expected deformities would only appear, if they could "only get it over with," they would be almost more satisfied than to have this "sword of Damocles" forever hanging over their heads. But it is this persistent negativity of their examination that should convince one that arthritis cannot be present. This negativity is relative, however, for there may be some periarticular thickening, and in about 50 per cent of the cases definite subcutaneous nodules are palpable, most commonly in the region of the sacro-iliacs or iliac crest. When nodules are absent, some believe the diffuse muscular pains to be a neuralgia or sensory nerves of muscles. Thus, the weakness of my presentation and that of others is the meager data available on the pathology of the disease as it affects muscles, but particularly joints. Our studies on pathology to date seem to give histologic evidence that a true arthritis is not present in periarticular fibrositis and that the integrity of interarticular tissues is indeed maintained.

DR. JAMES R. TILLOTSON, Lima, Ohio: What relation has occupation to this condition?

DR. WILLIAM J. KERR, San Francisco: In the hospital is a man, aged 32, who for ten years has had some rigidity of the spine and in recent weeks some involvement of the muscles of the face, arms, thighs and calves. When one examines the lower extremities in the region of the gastrocnemius muscle, he may find rather elongated areas that are somewhat firm. The patient can find them more rapidly than the physician at first. In one instance the firm area was about 4 inches in length and one-half inch in thickness. In attempting to secure a biopsy of this nodule in the gastrocnemius muscle I had a great deal of difficulty. I thought it was just beneath the external surface of the muscle but had to go very deeply to get any tissue that seemed to be abnormal in appearance. This tissue showed the same characteristics as have been mentioned here. I believe five or six nodules were found. In Great Britain it seems to be the practice among some physicians to break up these nodules forcibly.

DR. M. HENRY DAWSON, New York: The nodules in fibrositis are painful, while the nodules in rheumatoid arthritis are rarely if ever painful. I am of the opinion that the histologic structure of the rheumatoid nodules is quite distinctive.

DR. RUSSELL L. CECIL, New York: The disease spoken of as fibrositis is much in need of a more substantial pathologic background. Take the condition commonly known as acute lumbago, which often follows a strain or some unusual movement; some of these attacks are caused by wrenching a joint that is already affected by arthritic changes, as shown in the roentgenogram. There are other instances in which congenital anomalies of the spine produce the same sort of attacks. Then there is a condition often spoken of as myositis or fibrositis in which the x-rays failed to reveal any change in the back except some defect in posture. A great many of these posture cases are quickly cured and relieved of future attacks by improvement of the posture. All orthopedic men are familiar with this type of case. I wonder how many of these cases should be spoken of as "fibrositis." I wonder whether most cases of myositis or fibrositis of the lumbar region cannot be classified as mechanical maladjustments of weak backs due to the posture of the patient.

DR. CHARLES H. SLOCUMB, Rochester, Minn.: Regarding occupation, in England, as will be seen in the chart reproduced from Buxton, 55 per cent had fibrositis. The people that came to Buxton were miners and workers in factories, where they got cold and damp. I believe from those figures that patients with fibrositis are definitely made worse in cold, damp places. The reference to the breaking up of the nodules is a good one. Stockman and others use a firmer massage for patients with fibrositis than for patients with arthritis. Dr. Dawson commented about the nodules. The nodules in infectious arthritis and fibrositis are practically the same. Many of the nodules in fibrositis are not tender. In connection with Dr. Cecil's question regarding whether or not attacks of lumbago and muscle soreness are actually myositis or fibrositis, I cannot answer. There is a need for considerably more pathologic work in some of these cases. However, there is a large group that clinically and pathologically are fibrositis rather than myositis or arthritis. As far as the effect of the endocrines is concerned, I cannot link definitely any endocrine deficiency with primary fibrositis.

Differential Diagnostic Points of Conditions Mistaken for Arthritis

DR. WILLIAM J. KERR, San Francisco: Because the terms rheumatism and neuritis are loosely used, many less common conditions in medicine must be discussed.

Syphilis: Arthritis occurs early and late and even in congenital syphilis. The lesions are bilateral, not painful and of long duration. In congenital syphilis, dactylitis of the fingers rarely of the toes, is common. Chronic bursitis and myositis of the calf and sternomastoid muscles are observed. Periostitis, meningeal generalized aches and pain occur. Later the central nervous system and sensory roots cause peripheral pain. Charcot joints are present. Spondylitis is common with radicular symptoms. The history, other lesions, serologic tests and the x-ray examination establish the diagnosis.

Hemophilia: Bleeding from the synovial membrane is common and arthritis and deformity occur, especially in the elbow and knees. It occurs in the male before puberty with the history of a "bleeder." The clotting time is prolonged greatly and the platelets are normal in number. The bleeding is normal and the clot retracts normally.

Scurvy: Joint bleeding occurs in the general tendency to bleed. The periosteum near the joint may be elevated in the roentgenogram. Hemorrhages are general. The gums are spongy. There is a tendency to purpura. The remarkable effects following the use of vitamin C will support the diagnosis of scurvy.

Beriberi: The dry or polyneuritic form due to the deficiency of the antineuritic vitamin may confuse with its pain and weakness of the extremities. Paresthesias, impaired sensations, weakness and tenderness of the muscles occur. Suspected deficiency and response to treatment help in the diagnosis. The cardiac complications may be striking.

Rickets: Wasting of muscles, pallor and swollen epiphyseal line with the costochondral nodes (rosary) are diagnostic in children. The calcium loss is general.

Raynaud's Syndrome, Scleroderma and Arthritis. These are frequently associated, probably through poor circulation. Scleroderma of the fingers impedes circulation progressively. Raynaud's always causes thickened skin and swollen, flexed joints of the fingers. Roentgenograms generally show demineralization of the bones and acral destruction as in leprosy.

Leprosy: Paresthesias and loss of tissue in the digits occur late, but early the mixed nerve symptoms resemble Raynaud's syndrome and scleroderma. Enlargements and biopsy are diagnostic.

Cervical Rib and the Scalenus Anticus Syndrome: This causes circulatory disturbances and radicular symptoms. Changes in color, swelling of the joints and necrosis of the digits may be striking. The shape of the thorax and neck is suggestive. The onset in middle life with increasing weight, stooping and pulmonary emphysema contributes to the symptoms. Arthritis or scoliosis in the lower cervical spine causes changes in the hands through the nerve roots.

Erythralgia: Formerly erythromelalgia, erythralgia is pain and burning, discolorations and swelling with the feeling of warmth in the extremities. The arteries pulsate. Stasis causes the burning. The joints are secondary with fixation from disuse and contractures following.

Peripheral Neuritis: This condition from alcoholism or toxic conditions is common. Arsenic poisoning, primary anemia and diabetes cause sensory or motor symptoms. Trichinosis and dermatomyositis are mistaken for arthritis at times. Intermittent claudication, fallen arches and Paget's disease are confused also. Periarteritis nodosa may resemble the activities of rheumatic fever. The history and complete examination usually give the diagnosis.

DISCUSSION

DR. JOHN H. MUSSER, New Orleans: There are several conditions which are frequently associated with pains in the joints. The first of these is anemia. The pains may be due not to the deficiency in vitamin diet to which Dr. Kerr referred but to the anemia. The pain in the joints is common without any roentgenologic evidence of arthritis. Stiff and painful shoulder, for which there were some sixteen causes, is a condition in which it is hard to make an etiologic diagnosis. In a child who develops arthritis following an injection of serum, in the first twenty-four hours it becomes quite a problem to determine whether that pain is the result of the injection of serum some seven to ten days previously or whether it is part of the complications of, say, the associated meningitis. I have noted quite a few people with angina whose referred pain confined itself to the elbow. I was particularly fortunate some time ago in having a man who complained of pain in his left elbow after he had taken exercise. An electrocardiogram was made and the curve was that associated with coronary disease. On treatment of the coronary disease the pain in the elbow disappeared. I think that the important lesson Dr. Kerr points out is that one must not be satisfied to diagnose arthritis without a thorough survey of the patient.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers in continental United States and Canada for a period of three days. Periodicals are available from 1926 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Surgery, New York

32: 391-556 (June) 1936

Tumors of Head and Neck. A. F. Holding, Albany, N. Y.—p. 393.
Modern Treatment of Carcinoma of Uterus. A. M. Dickinson, Albany, N. Y.—p. 395.
Cancer of Rectum. W. F. Preusser, Albany, N. Y.—p. 399.
Tumor Clinic and Pathologist. J. J. Clemmer, Albany, N. Y.—p. 401.
Alternative Methods for Restoring Gastro-Intestinal Continuity After Gastric Resection for Carcinoma. D. C. Balfour, Rochester, Minn.—p. 405.
Rectal Administration of Evipal Soluble: Safe, Reversible and Controllable Preanesthetic Medication: Preliminary Report. J. T. Gwathmey, New York.—p. 411.
*Electrosurgical Obliteration of Gallbladder Without Drainage, as a Means of Reducing Mortality: Report of 201 Consecutive Unselected Cases. M. Thorek, Chicago.—p. 417.
Operative Mortality of "Inoperable" Carcinoma of Colon and Rectum. J. M. Lynch and G. J. Hamilton, New York.—p. 435.
Organization of Transfusion Service and Blood Donors Bureau for Average Hospital. H. E. Martin and Ruthe Whyte, New York.—p. 439.
*Glove Flap Method of Dorsal Hand Repair. G. B. O'Connor, San Francisco.—p. 445.
Skull Fractures: Study of 100 Consecutive Cases. E. G. Ramsdell, White Plains, N. Y.—p. 448.
Descriptive Terms for Abdominal Electrosurgery. L. R. Whitaker, Boston.—p. 452.
Effect of Head Injury on Hearing and Orientation. M. J. Gottlieb, New York.—p. 455.
Edema of Upper Extremity in Carcinoma of Mammary Gland: Its Prevention in Some Cases. J. J. Gilbride, Philadelphia.—p. 463.
Treatment of Carbuncle with Short Wave Diathermy and Cautery Puncture. M. Fellman, Jersey City, N. J.—p. 467.
Acute Appendicitis: Report of 757 Operated Cases. R. M. Pool, Fairfield, Ala.—p. 469.
Adequate Surgical Masking: Problem and Solution. E. G. Waters, Jersey City, N. J.—p. 474.
Strangulated Inguinal Hernias in Premature Infants. S. L. Goldberg and A. C. Rambar, Chicago.—p. 478.
Biopsy in Proctology. R. V. Gorsch, New York.—p. 483.
Treatment of Acute Pancreatic Necrosis. L. F. Smead, Toledo, Ohio.—p. 487.

Electrosurgical Obliteration of Gallbladder Without Drainage.—Experimental studies for a number of years have convinced Thorek that, if one could substitute a dry, nonleaking surface for the discharging cavity as the gallbladder bed represents following cholecystectomy, it would be a great step in the right direction. This thought has been brought to fruition by electrocoagulation. If a flat electrode of bipolar current is firmly applied to a tissue surface and a current of proper voltage and sufficient amperage is permitted to pass through it, dehydration and coagulation of the tissue proteins results in a few seconds. On the other hand, if the same electrode is not applied firmly or, if used as a unipolar or even bipolar instrument, a small air space (dielectric) intervenes between the electrode and the tissue, sparking, fulguration and carbonization with black discoloration of the tissues result. A reapplication of the electrode to such fulgurated or carbonized surface will stop further current penetration and prevent coagulation from taking place. The author evolved his method of cholecystelectrocoagulectomy on the basis of his experimental researches and clinical studies, the underlying principles of which consist of: (1) biterminal electrosurgical obliteration of the posterior wall and bed of the gallbladder by electrocoagulation; (2) because of the great tendency of electrocoagulated surfaces to become agglutinated with serous surfaces, mustering of the falciform ligament into service by completely detaching it from the anterior abdominal wall, and (3) strict avoidance of drainage. Up to April 1936 he has performed this operation in 181 consecutive, unselected cases of gallbladder disease including gangrenous, empyematous, sclerosed and other forms of pathologic disorders of the gallbladder. There was one death. Postmortem examination showed that the patient died from causes unrelated to the operation. Kellogg used the method in sixteen cases without a death, while Finlayson operated on four patients with good results. This brings the total number of operations performed to 201 cases.

Glove Flap Method of Dorsal Hand Repair.—Following a burn from gasoline, O'Connor used a glove flap replacement on a hand of which the dorsum and fingers as far as the distal phalangeal joints were covered with a thick, heavy, red, painful, nonelastic keloid scar that prevented finger, thumb and wrist flexion. The entire scar on the dorsum of the hand and fingers was excised. A surgical glove was placed on the hand and sutured along the denuded edges. The portion of the glove covering the defect was cut out, a pattern of the hand defect was made on the right side of the abdomen and the donor flap and seven pedicles, one for each finger and one for the ulnar and the radial side, were elevated by sharp dissection. The center flap and pedicle were made as thin as possible. The abdominal bed was skin grafted and then the injured hand was placed in the abdominal pocket and the flap pattern sutured to the hand. The digital pedicles were amputated in seven days, the ulnar pedicle in five days more, and the radial pedicle in one week more. The flaps were cut off under local anesthesia and sutured into their respective places and at the time of freeing from the abdominal wall complete take of the abdominal skin grafts was observed. The entire dorsum of the hand and fingers was covered in nineteen days, with a hospital stay of twenty-two days. By using elastic traction seven days after the last operation, a complete range of active finger motion was quickly obtained. At the present writing sensory nerve return has taken place.

Archives of Neurology and Psychiatry, Chicago

35: 1175-1402 (June) 1936

Catalepsy: Experimental Study. W. R. Ingram, R. W. Barris and S. W. Ranson, Chicago.—p. 1175.
Oxygen Saturation of Arterial Blood in Epilepsy. W. G. Lennox and Erna L. Gibbs, Boston.—p. 1198.
*Effect of Cervicothoracic Sympathectomy on Headaches. J. G. Love and A. W. Adson, Rochester, Minn.—p. 1203.
Postural Reflexes in Patients with Lesions of Frontal Lobe. I. S. Wechsler, I. Bieber and B. H. Balser, New York.—p. 1208.
Effect of Alteration in Posture on Intra-Arterial Blood Pressure in Man: I. Pressure in Carotid, Brachial and Femoral Arteries in Normal Subjects. J. Loman, W. Dameshek, A. Myerson and D. Goldman, Boston.—p. 1216.
Id.: Pressure in Carotid Artery in Arteriosclerosis, During Syncope and After Use of Vasodilator Drugs. J. Loman, W. Dameshek, A. Myerson and D. Goldman, Boston.—p. 1225.
*Functional and Histologic Studies of Somatic and Autonomic Nerves of Man. P. Heinbecker, G. H. Bishop and J. L. O'Leary, St. Louis.—p. 1233.
Relationship of Systolic to Diastolic Blood Pressure in Schizophrenia: Effect of Environmental Temperature. J. S. Gottlieb, Worcester, Mass.—p. 1256.
Disseminated Spinal Arachnoiditis: Its Diagnosis and Treatment with Roentgen Rays. H. Selinsky, New York.—p. 1262.
Vascular Changes Following Experimental Lesions in Cerebral Cortex. Y.-C. Tsang, Chicago.—p. 1280.
Studies in Multiple Sclerosis: VII. Similarities Between Some Forms of "Encephalomyelitis" and Multiple Sclerosis. T. J. Putnam, Boston.—p. 1289.

Effect of Cervicothoracic Sympathectomy on Headaches.—Love and Adson reexamined patients on whom operations on the cervical and cervicothoracic portions of the sympathetic nervous system had been performed for conditions other than headache in order to determine the effects of such operations on patients who complained of headaches in addition to the primary disease. They found that 75 per cent of eighteen patients who complained secondarily of headache were either partially or completely relieved of the headaches when bilateral cervicothoracic sympathectomy (according to Adson's technic) was performed for some other condition. Sympathectomy was most effectual in relieving headache when it occurred in association with Raynaud's disease. The relief of headache coincident with relief of a known vasomotor disturbance (Raynaud's disease) lends support to the view that severe headache occasionally, and migraine frequently, is the expression of a vascular

crisis related in some way to a disturbance of the sympathetic nervous system. It is apparent as a result of this study that cervicothoracic sympathectomy is effective in relieving a certain number of patients of periodic attacks of migraine. When a patient with migraine presents other symptoms indicating disturbance of the sympathetic nervous system, such as Raynaud's disease, cervicothoracic sympathectomy gives relief in about 75 per cent of cases. Cervicothoracic sympathectomy is justified in carefully selected cases of severe migraine.

Studies of Somatic and Autonomic Nerves.—Heinbecker and his associates found that the physiologic properties of human nerve fibers, of corresponding size and type, are practically identical with those of the ordinary laboratory animals, such as the monkey, cat, dog and rabbit. Certain differences exist between the various animals, including man, as to which type of fiber (for instance, the myelinated or the nonmyelinated postganglionic fibers in the cervical portion of the sympathetic trunk) is utilized to subserve a given function in the body. A certain degree of variation also exists in the distribution of fibers into the various branches of a nerve trunk innervating a given region. Owing to these complications and to the further possibility that the treatment of a nerve at operation without proper precautions is liable to affect its function on subsequent examination, the investigation of nerves as a means of diagnosis should include histologic, physiologic and functional studies, and the results should be interpreted in the light of the circumstances, pathologic and manipulatory, under which the material was obtained.

Archives of Ophthalmology, Chicago

15: 975-1176 (June) 1936

Primary Tuberculosis of Conjunctiva. A. Samuelson, Stockholm, Sweden.—p. 975.
Ciliary Margin of Dilator Muscle of Pupil, with Reference to Some Melanomas of Iris of Epithelial Origin. Bertha A. Klein, Chicago.—p. 985.
Cicatricial Ectropion as Result of Mucocele of Frontal Sinus: Plastic Repair. J. McLeod and P. Lux, Kansas City, Mo.—p. 994.
Cyclopia in a New-Born Kitten: Anatomic Findings. H. D. Lamb, St. Louis.—p. 998.
Dark Adaptation as Clinical Test: Technic and Results. J. B. Feldman, Philadelphia.—p. 1004.
Changes in Refraction Following Operation for Strabismus. D. Marshall, Ann Arbor, Mich.—p. 1020.
Congenital Head-Nodding and Nystagmus: Report of Case. R. A. Cox, Washington, D. C.—p. 1032.
Is Ocular Proprioceptive Sense Concerned in Vision? S. R. Irvine and E. J. Ludvigh, Boston.—p. 1037.
Twinning and Ocular Pathology: Report of Bilateral Macular Coloboma in Monozygotic Twins. A. Gesell and E. M. Blake, New Haven, Conn.—p. 1050.
Instrument for Measuring Dynamic Speed of Vision, Speed of Accommodation and Ocular Fatigue. C. E. Ferree and G. Rand, Baltimore.—p. 1072.
Panophthalmitis Due to Clostridium Welchii. H. C. Kluever and C. S. O'Brien, Iowa City.—p. 1088.

Archives of Otolaryngology, Chicago

23: 617-736 (June) 1936

*Performance Characteristics of Electrical Hearing Aids for the Deaf. H. E. Hartig and H. Newhart, Minneapolis.—p. 617.
Cytologic Study of Effects of Drugs on Cochlea. W. P. Covell, San Francisco.—p. 633.
Anomalous Vascular Lesion in Cerebellopontile Angle: Severe Neuralgic Pain in Ear and Profound Nervous Disturbance; Operation and Recovery. H. I. Lillie and W. M. Craig, Rochester, Minn.—p. 642.
Vestibular Tests: Their Practical Application. B. H. Shuster, Philadelphia.—p. 646.
Threshold of Feeling in Ear in Relation to Sound Pressures. D. M. Lierle and S. N. Reger, Iowa City.—p. 653.
Bacteriologic Studies in Acute and in Chronic Maxillary Sinusitis. Ella M. A. Enlows and S. A. Alexander, Washington, D. C.—p. 665.
Relation of Stapedius Reflex to Hearing Sensation in Man. J. R. Lindsay, H. Kobrak and H. B. Perlman, Chicago.—p. 671.
Comparison of Intradermal and Intramucosal Tests in Cases of Allergic Rhinitis. L. D. Linton, St. Louis.—p. 679.
Hemangioma of Nasal Septum: Report of Three Cases. I. F. Weidlein, Cleveland.—p. 682.

Electrical Hearing Aids for the Deaf.—In investigating the differences of the various hearing aids, Hartig and Newhart found that in the devices having as components a carbon microphone, a carbon amplifier and an ear-fitting receiver there are important differences in the amount of amplification produced and tremendous differences in the intelligibility ratings. The differences in performance do not depend measurably on the observed nonuniformity of response. Furnishing frequency response curves to the otologist with each hearing aid would be of no value. Of greater importance is a wide range of response, freedom from singular peaks of amplification and sufficient amplification. Of paramount importance is the actual aid that the user obtains in interpreting speech sounds and sentences correctly. Hearing aids having a low intelligibility rating were found to produce the greatest volume of noise by-products (principal cause of the poor intelligibility), owing to nonlinear distortion. Portable hearing aids consisting only of a carbon microphone and receiver are largely ineffective because of insufficient amplification. The best means of determining the personal usefulness of a carbon microphone hearing aid of known merit for a given person is the discrete sentence intelligibility test. The authors employed the following method: An exponential horn with an opening of 22 inches (55.8 cm.) was provided at the throat with a tapered fitting so as to match the holes in the receivers of the hearing aids. The microphone of the hearing aid and a speaker were placed in one room, and a number of observers were placed in an adjoining room, with a door between; tests of sentence intelligibility and of syllable articulation were then performed. The method permits hearing aids of different performance characteristics to be differentiated.

Arkansas Medical Society Journal, Fort Smith

33: 1-34 (June) 1936

The General Practitioner. M. E. McCaskill, Little Rock.—p. 1.
Fusospirochetal Infections of Lower Respiratory Tract. L. E. King, Hot Springs National Park.—p. 6.

California and Western Medicine, San Francisco

44: 353-456 (May) 1936

Operative Results in Cataracts Coincident with Dinitrophenol Therapy. H. Barkan, W. E. Borley, M. Fine and J. Bettman, San Francisco.—p. 360.
Spinal Anesthesia and the Anesthetist. W. L. Garth, San Diego.—p. 364.
Malignant Tumors of the Testis. G. D. Maner, Los Angeles.—p. 368.
Subthyroid Child. E. J. Lamb, Santa Barbara.—p. 371.
*Menstrual Hypoglycemia and Functional Dysmenorrhea: Their Relationship. M. K. Tedstrom and L. E. Wilson, Santa Ana.—p. 375.
Heart Disease in Physicians. R. T. Langley, Los Angeles.—p. 381.
The Frequency of Botulism. K. F. Meyer, San Francisco.—p. 385.
Thyroid Gland: Toxic Adenoma with Normal or Lowered Basal Metabolic Rate. H. H. Searls, San Francisco.—p. 389.
Uremia of Circulatory Failure. A. A. Alexander, Oakland.—p. 391.

Menstrual Hypoglycemia and Functional Dysmenorrhea.—Tedstrom and Wilson discuss further the relationship of menstrual hypoglycemia and functional dysmenorrhea. They tabulate the results of their blood sugar studies during menstruation and the results of extra carbohydrate feeding in thirty-eight cases. In every case in which the fasting blood sugar was low, that is, below 80 mg. per hundred cubic centimeters, the individual had either menstrual pains of varying severity or complained of marked nervousness, irritability, weakness, extreme hunger or excessive desire for sweets two or three days preceding menstruation. The treatment of the patients with functional dysmenorrhea associated with a low fasting blood sugar or a low sugar curve during menstruation consisted of extra carbohydrate feedings beginning about three days before the onset of the menses and continuing through the first three days of the period. It was observed that better results were obtained if the extra feedings were taken at intervals of two or three hours during the day rather than larger amounts at longer intervals. Orange juice was the usual form of carbohydrate taken. Karo syrup, dextrose and cane sugar worked equally well. These extra carbohydrate feedings have relieved the premenstrual tension and the menstrual pain in about 80 per cent of the cases in which they have been tried. Eight patients have been given 25 cc. of a 50 per cent solution of dextrose intravenously, with immediate relief of menstrual pain. If the pain returns, it is usually slight and easily controlled by extra carbohydrate feedings. Since relief of the menstrual discomfort was also obtained by several patients with a normal blood sugar, it seems wise to try this form of therapy in every case of functional dysmenorrhea.

Colorado Medicine, Denver

33: 377-448 (June) 1936

Hematuria: Introductory Remarks. J. B. Davis, Denver.—p. 390.
Hematuria Due to Infections. T. L. Howard, Denver.—p. 391.
Hematuria Due to Urinary Calculi. G. M. Myers, Pueblo.—p. 395.
Tumors of Urinary Tract: Their Relation to Hematuria. H. H. Wear, Denver.—p. 398.
The Medical Witness. P. Work, Denver.—p. 402.
Diagnosis and Treatment of Tuberculosis of Abdominal Cavity and Viscera. L. E. Likes, Lamar.—p. 405.
Organization of the Nursing Service in the General Hospital. Louise Kieninger, Denver.—p. 422.

Indiana State Medical Assn. Journal, Indianapolis

29: 265-310 (June) 1936

Clinical Classification of Tumors of the Breast. E. T. Bell, Rochester, Minn.—p. 265.
Anatomic Anomaly of Patella Mistaken for Fracture. H. G. Cole, Hammond.—p. 267.
Some Obstetric Aphorisms. C. O. McCormick, Indianapolis.—p. 268.
*Relation of Sinusitis to Arthritis. J. J. Littell, Indianapolis.—p. 270.
Pathology of Tympanic Membrane. B. D. Ravdin, Evansville.—p. 273.
Paranoid Deviation: Its Causes and Development. H. S. Hulbert, Chicago.—p. 276.
Torsion of the Spermatic Cord. H. D. Cogswell, Indianapolis.—p. 281.

Relation of Sinusitis to Arthritis.—Littell believes that (1) sinusitis often serves as a most important and frequently unrecognized focus in the cause of rheumatoid arthritis, (2) the systemic disease may often be markedly alleviated or entirely arrested by its proper care and (3) the area involved in these cases is usually the ethmoid. Sinusitis of some degree is common in temperate climates. His chief interest in it as a source of systemic disease is less in the amount of sinusitis than it is in the degree of absorption. Since he has approached it in this way, he has had much less disappointment in the care of the condition. Absorption takes place largely from the ethmoid-sphenoid region. A few cases have shown systemic improvement following treatment of chronic maxillary sinusitis. The greatest benefits, however, have accrued from attention to the upper sinuses. Of the twenty cases of arthritis cared for in the last few years, the author has had only two serious disappointments. In one of these, antral hyperplasia alone was removed. The patient showed no improvement and progressed unfavorably. The second, a severe case with fever, has now cleared up, but only after a stormy three years in Arizona. Three have shown only slight improvement. The remainder have improved from approximately 75 to 100 per cent.

Iowa State Medical Society Journal, Des Moines

26: 279-330 (June) 1936

Hernia: Its Cure by Injection of Irritating Solutions. C. O. Rice, Minneapolis.—p. 279.
Treatment of Strangulated External Hernia. W. E. Cody, Sioux City.—p. 283.
Sequels of Head Injuries. A. L. Sahs, Iowa City.—p. 286.
Differential Diagnosis of Lesions in Right Side of Abdomen, with Especial Reference to Urology. A. G. Fleischman, Des Moines.—p. 288.
Treatment of Asymptomatic Neurosyphilis. R. N. Larimer, Sioux City.—p. 292.
Indications for Surgery in Pulmonary Tuberculosis. J. C. Painter, Dubuque.—p. 294.
Tumors of the Breast. B. J. Dierker, Fort Madison.—p. 296.
Abdominal Drainage: Its Use and Abuse. E. J. Harnagel, Des Moines.—p. 299.
*Continuous Subarachnoid Drainage for Influenzal Meningitis by Means of a Ureteral Catheter and an Autogenous Vaccine. H. A. Stribley, Dubuque.—p. 300.
Hypertension and Brain Tumor: Case Report. W. D. Abbott, E. W. Anderson, Des Moines; C. Van Epps and A. E. Walker, Iowa City.—p. 303.

Subarachnoid Drainage for Influenzal Meningitis.—Stribley reports a case of influenzal (Haemophilus influenzae) meningitis in which complete recovery was made during treatment with continuous subarachnoid drainage, by means of a ureteral catheter and intramuscular injections of an autogenous vaccine. Almost daily spinal punctures were being made until he read Love's report of continuous spinal drainage. The catheter was inserted on three different occasions. The first time it remained in place four days. In about two days it was reinserted and remained in place five days. After its third insertion it remained in place for thirteen days. The catheter drained directly into a bottle pinned to the side of the bed. The patient was cooperative and the tube did not have to be cut off short. When the patient complained of too severe a headache, the end of the ureteral catheter was clamped off for a few hours with a small hemostat. The drainage of the spinal fluid always decreased in amount after the catheter had been in place forty-eight hours. Autogenous vaccine was administered intramuscularly on four occasions: 0.1 cc. of a 400 million autogenous vaccine per cubic centimeter was given on the thirteenth day of drainage, 0.1 cc. on the fifteenth, 0.15 cc. on the seventeenth, 0.2 cc. on the eighteenth and 0.25 cc. on the nineteenth. Forced fluids and physiologic solution of sodium chloride, as well as dextrose, were administered on several occasions during drainage. Methenamine was given by mouth empirically. The organism was morphologically and culturally Haemophilus influenzae. The organism grew extensively on a blood agar medium but not on the ordinary mediums.

Journal of Allergy, St. Louis

7: 319-442 (May) 1936

Desensitization of Skin Sites Passively Sensitized with Serum of Patients with Hay Fever: Crossed Reactions of Different Pollens; Variations in Recipient. F. M. Rackemann and H. C. Wagner, Boston.—p. 319.
Protein Content of Human Serums: Analyses of Serums Before and After Pollen Injections. A. Stull, Mary Glidden and Mary Loveless, New York.—p. 333.
Chemical Standardization of Pollen Extracts. A. F. Coca and E. L. Milford, Pearl River, N. Y.—p. 337.
*Studies in Contact Dermatitis: I. Adhesive Plaster Dermatitis: Technics for Surface Testing on Patients Sensitive to Adhesive Plaster. M. Grolnick, Brooklyn.—p. 341.
*The Mechanism of Migraine. A. M. Goltman, Memphis, Tenn.—p. 351.
*Leukopenic Index in Allergic Diseases. H. J. Rinkel, Kansas City, Mo.—p. 356.
Bronchial Asthma: Results of Treatment in 207 Patients Under Observation for Period Varying From One to Thirteen Years. L. Unger, Chicago.—p. 364.
Severe Allergic Reaction Following Wasp Stings with Subsequent Relief of Chronic Arthritis. Miriam Lincoln, Clifton Springs, N. Y.—p. 372.
Contact Dermatitis Due to Goat Hair: Report of Case. R. L. Kile, St. Louis.—p. 376.

Studies in Contact Dermatitis.—In principle, Grolnick's method for surface testing of patients who are sensitive to adhesive plaster consists in stamping out, by means of a glass tube, a ring of some liquid adhesive or fixing agent around the test substance and sealing this over by a disk membrane cut from some impermeable or nearly impermeable material. The materials suggested are plain cellophane and collodion (experimental), scrim cellophane and collodion (experimental), tracing paper and collodion (experimental), white single-faced rubberized cloth and duo liquid adhesive, rubber tissue and frisket type rubber cement. There exists a distinct need for a number of such substitute technics for patch testing, as a combination suitable in one subject may be unsuitable in another. The author has obtained the best results with rubberized cloth and duo adhesive and suggests this as a starting point when the problem of adhesive irritation arises. In fact, he has found it entirely satisfactory to use this procedure in a routine way in testing for contact dermatitis. Cellophane, which is used extensively in the patch test as a constituent part of it, may be of the moisture-proof kind, the surface coating of which contains a natural resin. This variety of cellophane may thus produce misleading positive reactions in selected instances.

The Mechanism of Migraine.—For the last five years, Goltman has had a young woman under his care who has suffered with typical migrainous attacks for as long as she can remember. Her case is singular in that she has had her brain explored through a burr opening over the left frontal region. The observations made suggest the following points for consideration: 1. There is at first a vasomotor spasm, as evidenced by blanching of the face and persistence of the depression in her skull. Other features of the aura observed by others, such as numbness and tingling, and eye symptoms, may be due to vascular spasm with subsequent temporary ischemia of the brain or parts of the brain. 2. There was secondary vascular dilatation with resulting edema of the brain, the severity and extent of which depend on the degree and duration of vasomotor stimulation. This swelling of the brain probably produces a temporary disproportion between the size of the cranial cavity and its contents, a condition in accordance with Auerbach's theory. Vascular dilatation and a wet brain were found on exploration. This evidences itself postoperatively by a bulging

in the left frontal region during a migrainous attack in the case reported. 3. There is a temporary hypersecretion of cerebrospinal fluid, and hyperabsorption of cerebrospinal fluid occurs simultaneously with or immediately following hypersecretion. The cerebrospinal fluid is rapidly produced and is absorbed just as rapidly. According to Weed, the passage of the cerebrospinal fluid into the large venous sinuses of the brain through the arachnoidal villi is purely a matter of filtration from a point of higher pressure to one of lower pressure. If this is so, with increased pressure within the subarachnoid space there must be a more rapid absorption of fluid. This hyperabsorption tends to equalize the pressure within the subarachnoid space.

Leukopenic Index in Allergic Diseases.—Rinkel performed 537 leukopenic index tests in fifty-six different patients whose symptoms included hay fever, perennial vasomotor rhinitis, asthma, eczema, urticaria and migraine. He found that a postmeal leukocytosis was usually associated with foods not producing allergy; whereas leukopenia or an indeterminate count was associated with those producing symptoms. The accuracy of a single forty-minute count is about 80 per cent that of the three postmeal counts. Several cases of intractable asthma were cleared up promptly when the leukopenic index was used as an adjunct to other tests. The count was of especial value in these cases because clinical observations were misleading. In one case only two foods agreed according to the leukopenic indexes, and this was corroborated by having the patient live on these foods for two weeks and remain absolutely free from symptoms during this time. In one case of extreme asthma it was found possible to relieve cough and wheezing commonly thought to be due to emphysema. Asthmatic patients whose symptoms could not be controlled either showed a positive leukopenic index to all foods or were unable to maintain a negative leukopenic index to a food regularly used in the diet.

Journal of General Physiology, New York

19: 693-898 (May 20) 1936. Partial Index

Effect of Proteins on Electrophoretic Mobility and Sedimentation Velocity of Red Cells. B. R. Monaghan and H. L. White, St. Louis.—p. 715.

Structure of Ultraviolet Absorption Spectrums of Certain Proteins and Amino Acids. C. B. Coulter, Florence M. Stone and E. A. Kabat, New York.—p. 739.

Bactericidal Effect of Ultraviolet Radiation on Escherichia Coli in Liquid Suspensions. A. Hollaender and W. D. Claus, Madison, Wis.—p. 753.

Individual Characteristics of Animal Amylases in Relation to Enzyme Source. W. R. Thompson and I. Friedman, New Haven, Conn.—p. 807.

Formation of Milk Sugar: The In Vitro Synthesis of Lactose by Active Mammary Gland Preparations. A. P. Weinbach, Columbia, Mo.—p. 829.

Kansas Medical Society Journal, Topeka

37: 221-264 (June) 1936

*Remissions in Progressive Muscular Dystrophy. D. V. Conwell, Halstead.—p. 221.

Some Modern Concepts of Cancer. E. C. Padgett, Kansas City, Mo.—p. 225.

Report of 4,511 Tuberculin Tests Using Intermediate Dilution of Tuberculin PPD. C. Hall, Topeka.—p. 230.

Action Currents in Schizophrenia. R. W. Robb, Osawatomie.—p. 234.

Remissions in Progressive Muscular Dystrophy.—Conwell points out that in 1930, after four months of viosterol therapy for rickets, a coexisting, far advanced, progressive muscular dystrophy showed unexpected improvement. A search of the literature failed to reveal viosterol as a treatment for muscular dystrophy, but considering his past failures with the disease he mentioned the incident to subsequent muscular dystrophy patients. Five or six patients elected to follow this regimen and in this group remissions have occurred. A history of a heredity factor was unobtainable. The four children had been on faulty diets of their own selection. One adult had followed a low protein diet for a year and the other adult employed a well balanced diet but had been exposed to the sun very little for thirteen years. There was no uniformity of the dietary faults. Three months of treatment (from 6 to 30 minims [0.4 to 2 cc.] of viosterol daily) was usually necessary before improvement could be observed. No untoward reactions were noted. The return of motor power was incomplete in three and complete in three patients. Of the former, one has relapsed, one is still disabled and one carries on about normal activity. The latter three patients have returned to normal activity and two have discontinued treatment, one for about two and one for four years, without signs of relapse.

Kentucky Medical Journal, Bowling Green

34: 225-276 (June) 1936

Medical Aspects of Ophthalmology. H. D. Abell, Paducah.—p. 228.

The Heart in Hypertension. W. B. Troutman, Louisville.—p. 234.

The Kidney in Hypertension. F. M. Stites, Louisville.—p. 236.

The Eye in Hypertension. F. Pirkey, Louisville.—p. 239.

Medical Aspect of Hypertension. F. G. Speidel, Louisville.—p. 240.

Hypertension in Pregnancy. H. M. Rubel. Louisville.—p. 241.

Changing Views on Cystic Diseases of the Breast. F. W. Rankin and A. E. Grimes, Lexington.—p. 245.

Advantageous Neurotic Reactions. W. E. Gardner, Louisville.—p. 248.

Removal of Piece of Steel from Vitreous. C. T. Wolfe, Louisville.—p. 255.

Neurologic Examination and Interpretation of Findings. J. J. Moren, Louisville.—p. 258.

Concerning the Common Traumatic Lesions of the Brain. F. Jelsma, Louisville.—p. 264.

Some Unorthodox Comments on Duodenal Ulcer. C. D. Enfield, Louisville.—p. 270.

Missouri State Medical Assn. Journal, St. Louis

33: 209-250 (June) 1936

Uterine Prolapse. E. L. Dorsett, St. Louis.—p. 209.

Protamine Insulin. D. R. Black, Kansas City.—p. 212.

Diagnosis and Treatment of Ocular Complications of Syphilis. W. M. James, St. Louis.—p. 215.

Pathogenesis and Prevention of Complications in Hematogenous Pyogenic Osteomyelitis. J. Kulowski, St. Joseph.—p. 218.

Etiology of Mesenteric Thrombosis. J. R. Green, Independence.—p. 220.

Polyneuritis in Pregnancy: Case Report. D. T. Vandel, Kansas City.—p. 223.

Management of Squint. C. S. Smith, Springfield.—p. 225.

New England Journal of Medicine, Boston

214: 1123-1172 (June 4) 1936

"Spray X-Ray Therapy" in Polycythemia Vera and in Erythroblastic Anemia. F. T. Hunter, Boston.—p. 1123.

Certain Relations Between Parathyroids, Hypophysis and Pancreas. B. A. Houssay, Buenos Aires, Argentina, South America.—p. 1128.

*Hypophysis and Resistance to Intoxications, Infections and Tumors. B. A. Houssay, Buenos Aires, Argentina, South America.—p. 1137.

Menorrhagia Occurring at Onset of Catamenia in Patient with Thrombopenic Purpura: Report of Case. A. Stern, Worcester, Mass.—p. 1147.

The Hypophysis and Resistance to Infections and Tumors.—Houssay points out that the existence of a direct antitoxic or anti-infectious action of the pituitary gland or its secretions has not been proved but that the gland can modify the resistance of the animal by its metabolic action, its regulating action on the thyroid or adrenal and on the vascular or nervous system. It has been thought that the increased growth in typhoid convalescents or sexual retardation and amenorrhea in adolescent tuberculous patients may be due to functional changes in the gland, but as yet there is no proof of this. Anesthetics and hypnotics are not tolerated well by hypophysectomized animals, and after operation some species are more susceptible to infections, poisons of the nervous system (cobra venom, morphine, chloralose), blood pressure and blood sugar lowering agents (insulin, phlorhizin). Hypophysectomy, because it produces hypothyroidism, provokes a decrease in phagocytosis and accelerated formation of antitoxins (in dogs), the agglutinin production not being changed. The thyrotropic hormone of the anterior pituitary by stimulating thyroid activity causes hypersensitiveness to anoxemia in rodents; in the mouse an increased resistance to acetonitrile and in the dog a slightly increased resistance to chloralose occur. The pituitary can be the site of benign or malignant new growths, also of metastases. The structure of the pituitary is modified in patients suffering from cancer. Hypophysectomy retards but does not prevent the growth of tumors and diminishes the number of implantations which take; probably this is due to a metabolic action, which should be studied. The urine of cancerous patients has a powerful gonadotropic activity. Pituitary extracts can accelerate the growth of certain tumors. In some cases the follicle stimulating factor has an inhibitory action, but its specificity and its practical importance are doubtful.

Oklahoma State Medical Assn. Journal, McAlester

29: 191-238 (June) 1936

Mortality of Acute Appendicitis: Consideration of Preventive Measures. H. Reed, Oklahoma City.—p. 191.
Traumatic Shock. G. E. Stanbro, Oklahoma City.—p. 199.
Gonorrheal Ophthalmia Treatment. W. A. Cook, Tulsa.—p. 202.
Cyclopropane in Comparison with Other Anesthetic Agents. G. S. Mechling and J. A. Moffitt, Oklahoma City.—p. 204.
*Rheumatic Heart Disease in Children. H. A. Ruprecht, Tulsa.—p. 207.

Rheumatic Heart Disease in Children.—Ruprecht points out that when the pediatrician thinks of heart disease he thinks first and foremost of rheumatism, which contributes from 80 to 90 per cent of all the organic heart ailments of childhood. It must be thought of as a generalized systemic infection, chronic in nature, characterized by periods of quiescence and exacerbations but exerting its most serious and ravaging effects on the heart. The initial infection of the rheumatic state occurs principally in childhood. About 0.5 per cent of the school population are affected by it. Of this number 64 per cent develop heart disease. The average age at which the primary rheumatic infection was acquired is 7 years. According to Stroud, at the end of ten years 40 per cent are either dead or totally disabled. Kaiser, however, found that only 8.2 per cent were dead at the age of 10 years. Davis and Weiss state that 5 per cent of all deaths due to rheumatic heart disease occur in the age period between 0 and 9 years, and 20 per cent between 10 and 19 years of age. Morse, in a follow-up study of 100 children seen during their first attack of "endocarditis" from ten to thirty years previously, found that thirty-six were dead, three were cardiac invalids and sixty-one were normal, alive and well. Of the sixty-one, thirty-seven had apparently normal hearts. He stated that death occurred early in a large proportion of the fatal cases. Rheumatic fever occurs most frequently among the lower economic class. The relationship between rheumatic fever and the streptococci is highly suggestive but still unproved. Prophylactic measures are limited to general hygienic measures, change of climate and possibly tonsillectomy, if done prior to the onset of the disease. Actual treatment still remains largely symptomatic and rest is the most important factor of all. Fever therapy is a promising addition to the older methods of treatment.

Radiology, Syracuse, N. Y.

26: 651-780 (June) 1936

Studies of Small Intestine: II. Effect of Foods and Various Pathologic States on Gastric Emptying and Small Intestinal Pattern. E. P. Pendergrass, I. S. Ravdin, C. G. Johnston and P. J. Hodes, Philadelphia.—p. 651.
*Skeletal Changes in Disturbances of Parathyroid Glands. P. C. Hodges, Chicago.—p. 663.
X-Ray Treatment in Hyperparathyroidism. E. A. Merritt and I. Lattman, Washington, D. C.—p. 673.
Review of Early Scientific Aspects of Pituitary Hormones and Significant Facts in Regard to Their Influence on Bone Growth. J. B. Collip, Montreal.—p. 680.
Study of Series of Menopausal Cases After Irradiation of Pituitary Gland. C. G. Collins, L. J. Menville and E. P. Thomas, New Orleans.—p. 682.
Importance of Roentgenographic Studies of Osseous Development in Endocrine Diagnosis. H. C. Shepardson, San Francisco.—p. 685.
Radiation Castration in Treatment of Malignancy of the Breast. D. Steel, Cleveland.—p. 700.
High versus Low Intensity Irradiation in Treatment of Carcinoma: Experimental Study on Non-Neoplastic Epithelium and Mesoblastic Tissue. A. Brunschwig and S. P. Perry, Chicago.—p. 706.
Acute Painful Ankylosing Arthritis, with Especial Reference to Nonsuppurative Type. H. A. Olin, Chicago.—p. 717.
Roentgenologic Aid in "Acute Abdomen," with Especial Reference to Intestinal Obstruction. W. R. Stecher, Easton, Pa.—p. 729.
Cleidocranial Dysostosis (Mutational Dysostosis): Case Report. B. A. Rhinehart, Little Rock, Ark.—p. 741.
Radiation from an Oil-Immersed Therapy Tube. M. M. D. Williams, Peiping, China.—p. 749.

Skeletal Changes in Disturbances of Parathyroids.—Hodges sketches briefly the phases of parathyroid function and dysfunction by discussing the state of calcium in the blood, normal parathyroid control of calcium, calcium regulation in hyperparathyroidism, calcium regulation in hypoparathyroidism, roentgen diagnosis of skeletal lesions in hyperparathyroidism and differential diagnosis. From clinical and laboratory studies on material of this sort, it is now generally believed that hyperparathyroidism, either spontaneous or induced, causes an excessive amount of calcium and phosphate to pass from the bones into the blood, resulting eventually in the generalized skeletal condition known as osteitis fibrosa cystica or von Recklinghausen's disease. The removal of an abnormal gland or the cessation of extract injection slows up the outward calcium and phosphate tide, following which normal processes, only dimly understood, slowly return calcium phosphate to the bones until calcium ion concentration in the plasma falls to normal levels.

Southwestern Medicine, Phoenix, Ariz.

20: 205-246 (June) 1936

Inguinal Trigon: Industrial Considerations. R. F. Palmer, Phoenix, Ariz.—p. 205.
Treatment of Hernia by Injection Method. F. R. Girard, San Francisco.—p. 209.
Leukemia: Case Report. F. D. Vickers, Deming, N. M.—p. 216.
Scorpion Stings: Case Reports. E. J. Gungle, Morenci, Ariz.—p. 218.
Nonconvulsive Toxemias of Pregnancy. D. Fournier, Phoenix, Ariz. —p. 222.
Unusual Lithiasis. H. C. Bumpus, Pasadena, Calif.—p. 223.

Virginia Medical Monthly, Richmond

63: 131-196 (June) 1936

Effects on Virginia of Medical Provisions in the Federal Social Security Act. I. C. Riggin, Richmond.—p. 131.
*Suppurative Condition of Lung Treated by Artificial Pneumothorax. C. L. Harrell, Norfolk.—p. 134.
Observations on History Taking in Allergy. O. Swineford, University. —p. 139.
Diathermy: Electrically and Clinically. J. O. Fitzgerald Jr., Richmond. —p. 148.
External Version in the Eighth Month for Breech Presentations. P. E. Thornhill, Norfolk.—p. 153.
Essential Hypertension and Bright's Disease: Their Differential Diagnosis and Treatment. P. D. Camp, Richmond.—p. 157.
Cicatricial Stenosis of Esophagus: Report of Cases. C. C. Cooley, Norfolk.—p. 162.
Our Challenge and Answer. A. M. Burfoot, Fentress.—p. 166.
Gunshot Wounds of the Ear: Report of Two Cases. E. U. Wallerstein, Richmond.—p. 171.
Foreign Bodies in Abdomen: Report of Case. O. T. Amory, Newport News.—p. 173.
Method of Treating Severe Acidosis Developed in the St. Louis Children's Hospital. W. E. Keiter, Kinston, N. C.—p. 175.

Lung Abscess Treated by Artificial Pneumothorax.—Harrell adds seven cases of abscess of the lung to the sixteen that he reported four years ago as treated by artificial pneumothorax. Nine of the group were cured by this method alone, one patient died, while three came to operation, two of whom got well. In producing pneumothorax for a tuberculous lung, an endeavor is made to collapse the lung completely and hold it at rest until it heals. In acute abscess or suppurative conditions of the lung the objective is to promote and facilitate drainage, as it is through the process of drainage that pyogenic infections are thrown off and healing takes place. As soon as a diagnosis of lung abscess is made, small quantities of air should be injected in the pleural cavity to act as a buffer and prevent the lung from sticking. The wavelike motion through inspiration and expiration will continue and the lung will be in a better position to empty itself, and a larger percentage will recover in a shorter time. In his first series of sixteen cases, the shortest period under treatment was one month, the longest six months. In the second series of seven cases, one patient died of abscess of the brain, although from all appearances the lung was healing satisfactorily. Two died while under treatment, one from pulmonary hemorrhage and the other from lack of cooperation. Both of these were chronic cases and were refused by the surgeon. One came to operation and went on to recovery; the remaining three patients recovered, with an average of three months under collapse therapy. Two of three patients developed abscess following tonsillectomy under general anesthesia, one following operation on the stomach, one following the extraction of an infected tooth and one following pneumonia; another had a very marked case of oral sepsis, while the cause of the last was undetermined. In conclusion, complete recovery occurred in twelve cases, or 52.1 per cent, under collapse therapy combined with rest, the highest percentage of recoveries given under any other form of treatment. The author claims that collapse therapy is the easiest, quickest and safest form of treatment that can be used in acute lung abscess.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Dermatology and Syphilis, London

48: 221-280 (May) 1936

Poikiloderma Congenitale. M. S. Thomson.—p. 221.
Etiology of Eczema: Note. J. M. H. MacLeod and I. Muende.—p. 234.
*Polymyositis with Eosinophilia: Case. D. McAlpine.—p. 238.

Polymyositis with Eosinophilia.—McAlpine cites a case of polymyositis that resembles dermatomyositis. The case is remarkable because of the high grade eosinophilia. A man, aged 36, after malaise had pains in the lower limbs, followed later by swelling and hardening of the muscles. Weeks later the upper limbs were similarly affected, with impaired movements of the fingers and wrists. The veins of the upper and lower limbs became prominent, and pulsation developed in the cephalic veins. Six months after the onset the disease was still active, as was shown by pains in the trunk muscles usually associated with gastro-intestinal symptoms. Movements of the fingers and wrists were much restricted, and the muscles, especially of the forearms, felt abnormally hard. No lesion of the skin was apparent except a diffuse brownish pigmentation over the forearms and legs. A leukocytosis and high grade eosinophilia (eosinophils 37 per cent) were present six months from the onset; these gradually became less marked as clinical improvement took place. Repeated examination of the feces failed to show a helminthiasis. Apart from an excess of streptococci in the feces, no toxic focus was found. A small piece of muscle removed from the forearm showed mild inflammatory changes. Subsequently considerable improvement took place, so that the patient was able to return to work a year after the onset. A point of significance in considering the association between myositis and eosinophilia is the gradual diminution in the number of eosinophils corresponding with the clinical improvement; this suggests that the eosinophilia did not exist prior to his illness, and therefore it can have been caused only by the infective agent or by some product of the myositis. It is suggested that the subcutaneous tissues and muscles became hypersensitive to some infective agent; it is possible that the infective agent was a streptococcus. This case may serve the purpose of drawing attention to the occasional association of myositis and eosinophilia in the absence of helminthiasis.

British Medical Journal, London

1: 979-1032 (May 16) 1936

Surgery of Jaundice. J. Walton.—p. 979.
Protein in Nephritis. C. S. D. Don.—p. 985.
Renal Function in Disease. R. Platt.—p. 987.
Value of Negative Subcutaneous Tuberculin Test. R. Carswell.—p. 990.
Pregnancy Diagnosis Laboratory (1935): Notes. F. A. E. Crew.—p. 993.

Edinburgh Medical Journal

43: 281-348 (May) 1936

Clinical Recollections and Reflections: II. Notes on the Diagnosis of Some Febrile Conditions. G. L. Gulland.—p. 281.
*Acid Ammonium Phosphate as Urinary Acidifier. S. Alstead.—p. 292.
*Leuko-Erythroblastosis. J. McMichael and J. W. McNee.—p. 303.
*Parenteral Administration of Vitamin B_1 in Treatment of Polyneuritis and Other Conditions. W. R. Russell.—p. 315.
Effect of Constitutional "Vitality" on Prognosis, as Illustrated by Acute Appendicitis. W. O. Kermack and A. G. M'Kendrick.—p. 324.
Depot Treatment of Pernicious Anemia: Note. R. M. Murray-Lyon.—p. 329.

Acid Ammonium Phosphate as Urinary Acidifier.—Alstead states that acid sodium phosphate is of negligible value as an acidifier of the urine and that its use should be abandoned. Frequently it actually alkalizes the urine and cannot be regarded as a suitable standard by which to assess the value of ammonium acid phosphate. Acid ammonium phosphate in doses of approximately 2 Gm. three times a day markedly diminishes the p_H of the urine, and no further increase in the hydrogen ion concentration occurs with greater doses. Despite the administration of large doses of acid ammonium phosphate the p_H of the urine never fell below 4.7, and the maximal acidity of the urine in the great majority of the patients was represented by a p_H of about 5.5. Considerable alteration in p_H was frequently seen, notably in three cases in which the ranges were p_H 8.7 to 5.7, p_H 8.5 to 5.8 and p_H 7.8 to 5.2, respectively. In these cases the urine was already alkaline when the administration of ammonium acid phosphate was begun. In patients whose urine was previously fairly acid (about p_H 6) the use of the ammonium salt produced comparatively little change in the hydrogen ion concentration. The saline cathartic action of acid ammonium phosphate appeared when the daily dose amounted to 17 Gm.; i. e., about three times the effective dose for acidifying the urine.

Leuko-Erythroblastosis.—McMichael and McNee discuss three patients, presenting themselves as examples of "splenomegaly of unknown origin" under the term "leuko-erythroblastosis." The blood picture in each showed the constant presence in the circulating blood of numerous immature red and white cells. The term seems more accurate than leuko-erythroblastic anemia (Vaughan 1934), since anemia may be absent and even polycythemia exist at a stage when the diagnosis may still be made. All three patients were women. All are dead, but a postmortem examination could be carried out only in one instance, in which death followed splenectomy. In the other two patients the disease ran its natural course and in both terminated with features of a hemorrhagic diathesis. These three cases have a common pathologic basis in the presence of myeloid metaplasia as the predominating feature of the microscopic appearance of the spleen. Associated with this extramedullary hematopoiesis is the occurrence of erythroblasts and myelocytes in the circulating blood. The disease appears to be uniformly fatal and its course is relatively uninfluenced by roentgen treatment, liver therapy and splenectomy. In the postmortem examination one striking feature was the apparent absence of much active marrow in the long bones. This disappearance of marrow tissue was not due to any serious sclerosis or fibrosis in the marrow cavity, for there was ample room among the fat spaces of the marrow for local increase of hematopoietic tissue. Why such extensive extramedullary hematopoiesis should be found in the presence of a bone marrow which in places was almost aplastic it is impossible to say. In the clinical diagnosis of a leuko-erythroblastosis, leukemia is the most difficult condition to exclude. Chronic myelogenous leukemia nearly always shows some degree of erythroblastosis as a hematologic feature, but it is found that the number of erythroblasts seldom reaches 5 per cent of the number of myelocytes and is usually much less. In leuko-erythroblastosis the proportion of nucleated red cells is usually much higher than this and may range from 5 per cent of the myelocyte figure to a number far exceeding the myelocytes. The leukocyte count does not reach the high figures so common in myelogenous leukemia, 58,000 being the highest encountered and figures exceeding 40,000 being unusual. In early cases the differential diagnosis may be extremely difficult. Failure of the spleen to diminish appreciably in size to roentgen treatment is a helpful diagnostic point. When a tentative diagnosis has been made it is then time to search for a cause, especially in the bones and bone marrow. Failing that, no etiologic factor is known.

Vitamin B_1 in Treatment of Polyneuritis.—Russell has treated cases of chronic progressive polyneuritis, alcoholic neuritis, subacute combined degeneration of the spinal cord and patients suffering from anorexia with parenteral injections of vitamin B_1 with good results. In cases showing peripheral nerve degeneration the shorter nerves, to the proximal parts of the extremities, are least severely damaged and show rapid recovery following the administration of the vitamin. Parenteral administration of the vitamin is of advantage, as thereby any risk of destruction of the vitamin in the alimentary canal is obviated. It is of advantage also for purposes of diagnosis, as the response when deficiency is present is strikingly rapid.

International Journal of Psycho-Analysis, London

17: 143-268 (April) 1936

Contribution to Study of Schizophrenia. R. Laforgue.—p. 147.
Specific Determinants in Feminine Development. Marjorie Brierley.—p. 163.
Contribution to Subject of Transference-Resistance. Grete Bibring-Lehner.—p. 181.
Contribution to Theory of Schizophrenia. Edith Weigert-Vowinckel.—p. 190.
Psychoanalysis and Psychiatry. S. Rado.—p. 202.
Final Goal of Psychoanalytic Treatment. M. Bálint.—p. 206.

Lancet, London

1: 1101-1160 (May 16) 1936

Carcinoma of the Stomach. J. Walton.—p. 1101.
*Hypertension Produced with Benzedrine: Its Psychologic Accompaniments. S. A. Peoples and E. Guttmann.—p. 1107.
*Puerperal Surgical Scarlet Fever. A. H. G. Burton and J. H. Weir.—p. 1110.
Treatment of Vesicovaginal Fistula, with Especial Reference to Implantation of Ureters. G. S. Woodman.—p. 1112.
Significance in Certain Cases of Systematized Interlobular (Portal) Infiltration of Liver with Lymphocyte-like Cells. F. P. Weber and A. Schülter.—p. 1115.
Intermittent Diarrhea Associated with Bacillus Asiaticus. G. Slot and D. Blomfield.—p. 1116.

Hypertension Produced with Benzedrine.—Peoples and Guttmann wished to find what mental changes will take place in normal or mentally abnormal persons when their blood pressure is altered artificially. They made experiments with benzedrine on twenty-five persons. The drug was given orally in doses between 10 and 80 mg. In each subject the normal daily fluctuation of blood pressure was recorded and the mental state was carefully considered. There were only two persons who did not show any reaction to the doses used. The lowest dose to which any one reacted appreciably was 20 mg.; twenty-two patients reacted to 30 mg. There was no blushing or pallor and no alteration of the size of the pupil, gastro-intestinal motility, perspiration or genito-urinary function. In the seven cases in which blood sugar readings were made during the experiment there was no fluctuation beyond the normal limits. Respiration was unaffected. In some cases the appetite was less during the action of the drug, and about one fourth of the subjects reported dryness of the mouth. The latent period after the administration of the drug generally lay between forty-five minutes and two hours. Once the action on the blood pressure had become apparent, the maximal point was reached in about an hour. The decrease was gradual; the normal pressure was reached between two and five hours after the peak, according to the dose given. The blood pressure always became normal within twenty-four hours after the administration of the drug. The intensity of the reaction apparently depends on several factors, the most important of which was the amount of the drug administered. Persons with low and labile pressure reached more than those with higher and more stable pressures. The pressure changes were chiefly systolic, the diastolic showing little or no increase, so that there was an increase of the pulse pressure. The acceleration of the pulse usually lasted longer than the increase of the blood pressure. The majority of the subjects found difficulty in going to sleep and woke much earlier than usual. The first psychic symptom after the administration of the drug was talkativeness, especially in depressive patients; they overcame their retardation, and several of them talked spontaneously to other people for the first time since their admission. Improvement was also visible in the patients' movements. Some of the normal subjects showed a motor restlessness. The most interesting feature was a change of mood, experienced in nearly every case. In no instance was anxiety produced or a depression deepened. The change was generally in the direction of euphoria. To demonstrate some features of the complex mental changes, sixteen patients were given the Kraepelin continuous addition test before and during the intoxication, and in some cases control experiments were made at various times: nine showed an increase in the number of additions far beyond the probable error and the normal increase by practice, and the rest had only slight increases or none. This drug is promising, but it cannot be used until it is known whether permanent administration produces anything like adaptation, habituation or addiction.

Puerperal Surgical Scarlet Fever.—Burton and Weir report three cases of puerperal scarlet fever, none of which showed hemolytic streptococci in the throat, but all harbored them in the cervix; the organisms were all inagglutinable with the ordinary scarlet fever type serums. The nose and throat of the doctor concerned and of those in attendance, who were different in each case, were negative for hemolytic streptococci, indicating that the disease was not a droplet infection. Puerperal fever without a rash, when due to a hemolytic streptococcus, does not differ from puerperal surgical scarlet fever, except in the type of organisms in some cases and in the susceptibility of the patient in others. Definite benefit accrued in each case from the administration of scarlet fever antitoxin. Although they do not admit of definite proof, the authors believe that the results would not have been so favorable had the cases been treated by any means other than with serum. Despite recently adduced evidence to the contrary, they are of the opinion that all such cases—and many others of puerperal sepsis, even when no scarlatinal rash is manifested—would be benefited by the early administration of an adequate amount of scarlet fever antitoxin.

Quart. Bull., Health Org., League of Nations, Geneva

5: 1-210 (March) 1936

Recent Extensions of Knowledge of Yellow Fever. F. L. Soper.—p. 19.
Yellow Fever in West Africa. P. S. Selwyn-Clarke.—p. 69.
Insects in Airplanes. C. B. Symes.—p. 79.
Position of India in Regard to Yellow Fever Question. C. A. Sprawson.—p. 87.
Position in Regard to Plague in the Union of South Africa. E. N. Thornton.—p. 96.
Plague in Madagascar, and New Knowledge Gained from Research During Last Three Years. G. Girard.—p. 103.
Developments in Endemic Plague in Angola from 1932 Onward. L. Ribeiro.—p. 108.
Insecticide as Major Measure in Control of Malaria, Being an Account of Methods and Organization Put in Force in Natal and Zululand During Past Six Years. G. A. P. Ross.—p. 114.
Control of Malaria in South Africa by Measures Directed Against Adult Mosquitoes in Habitations. B. De Meillon.—p. 134.
Malaria Control by Planting of Swamps. H. S. de Boer.—p. 138.
Typhus and Typhus-like Diseases in South Africa. E. H. Cluver.—p. 142.
Typhus Fever in Uganda and Its Control. H. S. de Boer.—p. 149.
The Typhoid Carrier Problem in the Union of South Africa. E. H. Cluver.—p. 153.
Dangers of Locust Campaign to Human Beings. E. N. Thornton.—p. 158.
Dangers of Locust Campaign to Stock. P. J. Du Toit.—p. 159.
Wild Carnivora as Carriers of Rabies. P. J. Du Toit.—p. 162.
Bovine Tuberculosis. P. J. Du Toit.—p. 166.
Trypanosomiasis of Domestic Animals. P. J. Du Toit.—p. 170.
Trypanosomiasis: Notes. Maclean.—p. 179.
Internal Parasites in Relation to Meat Supplies. P. J. Du Toit.—p. 182.
Malta Fever in South Africa. E. N. Thornton.—p. 185.
Brucella Infections from the Public Health Point of View. P. J. Du Toit.—p. 187.
Virus Diseases of Animals Communicable to Man. P. J. Du Toit.—p. 191.
Hygiene and Medical Services in Rural Areas. E. N. Thornton and A. J. Orenstein.—p. 200.
One Aspect of Medical Assistance to Natives. L. Ribeiro.—p. 205.
Coordination of Health Work in Africa. E. N. Thornton and A. J. Orenstein.—p. 208.

Journal of Oriental Medicine, Dairen, South Manchuria

24: 63-78 (May) 1936

Innervation of Human Gums and Morphology of Nerve Endings in Normal and Pathologic Conditions Confirmed by Experimental Studies on Animals. T. Hosaka.—p. 63.
*Influence of Cod Liver Oil on Bacteria and Infected Wounds. S. Hayashi.—p. 65.
Investigations of Amebic Dysentery: VIII. Formation of Antibodies by Amebic Dysentery. Y. Yamamoto.—p. 66.
Influence of Water Soluble and Alcohol Insoluble Components and of Ethereal Oil of Allium Scolodoprasum on Blood Sugar. T. Miyamoto.—p. 69.
Clinical Observations of Kaschin-Beck's Disease Found in Fushun, Manchukuo. S. Ryo.—p. 70.
Acute Lymphatic Leukemia: Case. U. Takei.—p. 71.
Influence of Metallic Salts on Tubercle and Nonpathogenic Acid-Fast Bacilli Being Cultivated in Kirchner's Mediums Plus Ajinomoto. K. Fukumoto.—p. 72.
Dog-Bitten Patients in Hsinking and Its Neighborhood (from 1929 to 1934). K. Toki.—p. 74.
Verification of Virus (Rickettsia) in Urine of Patients and Guinea-Pigs Infected with Typhus Fever in a Broad Sense. K. Kawamura.—p. 75.
Amount of Effective Component Which Passes into Smoke When Heroin Is Smoked: Part I. Biologic and Chemical Determination. R. Ito.—p. 76.
Id.: Part II. Biologic Determination. R. Ito.—p. 78.

Influence of Cod Liver Oil on Infected Wounds.—Hayashi believes that the accelerated healing power of cod liver oil when applied to infected wounds is mainly due to the effect of vitamins A and D and the lipoid contained in the oil. The effect should be attributed chiefly to the action of the lipoid. The effect of vitamins, which has heretofore been regarded as the chief efficacious property, is not really as remarkable as that of lipoid. The continuous application of cod liver oil for clinical treatment of wounds and bruises does not seem to cause any reactions.

Marseille Médical

73: 329-376 (March 15) 1936

Colitis Due to Lamblia in Patient Intolerant to Arsenic: Mineral Water Therapy. Enault.—p. 329.
Chronic Diarrhea of Nine Years' Duration with Presence of Trichomonas in Stools: Rapid Cure by Essence of Terebenthene: Case. J. Brahic and M. Sardou.—p. 333.
Typho-Exanthematic Fever Observed in Marseille. H. Mercier, Fabre and Soulage.—p. 339.
Attenuated Evolution Form of Human Trypanosomiasis. A. Sicé, C. Robin and H. Mercier.—p. 345.
Melitococcus Infection Appearing at Onset as Typhoid Fever: Case. L. A. Bordes and J. Soulage.—p. 352.
*Utilization of Iron Peptonate Serum Reaction in Diagnosis of Internal Leishmaniasis. P. Giraud, P. Ciaudo and R. Bernard.—p. 355.

Serum Reaction in Diagnosis of Leishmaniasis.—Giraud and his co-workers carried out investigations on iron peptonate as a reactive for serum. The action of solutions of these substances on normal serums and serums from leishmaniasis patients furnished serologic reactions already known in kala-azar, but with increased intensity. The authors noted especially the specificity, constancy and sensitivity of the reactions obtained by various solutions. Two reactives were found superior to others. These were the iron peptonate powder of Merck and the iron peptonate solution of Robin. The preferable dilutions of these substances were respectively 1:600 and 1:320. They concluded that the reaction was definitely valuable in the diagnosis of leishmaniasis. Its consistency was remarkable and it was quite sensitive. When compared with other reactions that have been employed in the diagnosis of kala-azar, they believe that this method is superior.

Paris Médical

1: 477-508 (June 6) 1936

Infectious Diseases in 1936: Annual Review. C. Dopter.—p. 477.
*Staphylococcic Anatoxin. R. Debré, H. Bonnet and S. Thieffry.—p. 494.
*Detection of Yellow Fever by Histologic Examination of Liver. J. Bablet.—p. 500.
Septicemias from Bacillus Faecalis-Alkaligenes. G. Andrieu, R. Crosnier and P. Moutier.—p. 506.

Staphylococcus Toxoid.—Debré and his collaborators discuss the use of anatoxin (toxoid) in staphylococcic infections. The toxoid, like the staphylococcic toxin, flocculates in the presence of antistaphylococcus serum. This enables the accurate titration of various toxoids. The toxin injected in progressive doses into a horse produces in the serum of that animal a specific antitoxin from which an antistaphylococcus serum can be prepared. It is this serum which, placed with the toxin, neutralizes its triple hemolytic, escharotic and lethal properties. They have by this means been able to produce a serum reaching a titer of 250 international antitoxin units per cubic centimeter. This serum, when used in various staphylococcic infections, was in many instances quite successful. They conclude that therapeusis with toxoid should be tried in the presence of any serious infection due to the staphylococcus. General reactions characterized by fever and profound malaise do sometimes occur but in their experience have never taken alarming proportions. Local reactions are almost the rule but in only a few instances are severe enough to indicate cessation of treatment. Focal reactions are impressive and can sometimes be noted by the patient. In view of these occasionally disturbing possibilities, they believe it a good rule to give a preliminary intradermal injection of 0.1 cc. in most staphylococcic infections. The results are good but are at present uncertain in severe infections and pyonephrosis and are unfavorable in osteomyelitis. The interpretation of the results remains difficult, especially in view of the fact that many spontaneous recoveries occur.

Detection of Yellow Fever by Examination of Liver.—It has been recognized for some time that histologic examination of the liver might reveal the evidence of latent yellow fever. Thus Hoffmann has insisted since 1928 that the degenerative lesions of the liver are so extraordinary and so specific that they allow a positive and certain diagnosis. Bablet believes that the histologic examination of a fragment of liver fixed in 15 per cent formaldehyde and stained will give an entirely characteristic picture. The fatty degeneration and the necrosis are especially characteristic. Practically, the elective distribution of the cellular degenerative lesions in certain regions of the lobule carries a positive diagnosis of toxic hepatitis due to yellow fever. In the absence of a serologic method allowing the positive diagnosis of yellow fever and the failure of experimental inoculations, postmortem viscerotomy and histologic examination of the liver must be considered the most effective measures of reaching a positive diagnosis.

Schweizerische medizinische Wochenschrift, Basel

66: 565-584 (June 13) 1936

Epidemic Poliomyelitis. H. Meuli.—p. 565.
Lipoid Nephrosis. Taillens.—p. 569.
Acute Intoxication After Intra-Uterine Injection of Soap, Lysoform and Alcohol. G. Gander.—p. 570.
*Apoplectiform Hemorrhage in Uvula. A. Schoenlank.—p. 571.
Experimental Studies on Biologic Actions of So-Called Earth Rays. E. Jenny, A. Oehler and H. Stauffer.—p. 572.
Efficiency of Fluid Culture Mediums for First Culture of Tubercle Bacilli. F. Löwenstein.—p. 577.

Hemorrhage in Uvula.—Schoenlank reports the history of a man, aged 49, who always had an attack of coughing in the morning (chronic pharyngitis). One morning he had an unpleasant foreign body sensation. The retching caused lancinating pains radiating backward and upward in the throat. The feeling of discomfort increased to severe dyspnea and the patient tasted blood on the tongue. When after about thirty minutes he came up for examination, the uvula showed a balloon-like enlargement, so that it touched the pharyngeal wall, left only a small opening between the tonsils and the palatine arches and rested on the tongue. The uvula was violet-blue-red. In the upper third, on the left side, it had two small tears and there were lighter spots from which blood had escaped. The portion of the uvula resting on the tongue was edematous. The enlargement of the uvula was caused by a hematoma, which was punctured and suctioned off. In order to decrease the edema, 10 cc. of a 20 per cent solution of calcium gluconate was injected and ice packs were prescribed. These measures counteracted the dyspnea and gradually also the difficulties in swallowing. This type of disorder was first described in 1853. It has been mistakenly referred to as Bosviel's disease, for when that author described a case in 1911 he believed his report to be the first.

Archivio Italiano di Chirurgia, Bologna

43: 237-314 (May) 1936

Surgical Importance of Anatomopathologic Alterations of Wall of Inferior Vena Cava. S. Solieri and G. Bazzocchi.—p. 237.
Technic for Performing Sigmoidostomy. G. Cavina.—p. 252.
*Osteochondritis Dissecans of Elbow. A. Pezcoller.—p. 257.
Influence of Operations on Acid-Base Equilibrium of Arterial Blood. C. Colombo.—p. 283.
Primary Carcinoma of Gallbladder: Cases. E. Savarese.—p. 297.

Osteochondritis Dissecans of Elbow.—Pezcoller reports a case of osteochondritis dissecans of the elbow in which the osteochondritic fragment removed was formed by two parts, which were slightly united. The portion which was separated from the epiphysis was necrotic and that which was united to the epiphysis retained vitality and vascularization. Connective and fibrocartilaginous cells were newly formed near the epiphysis and a process of regeneration of the necrotic spongy substance of the fragment which was united to the epiphysis was evident. It is obvious that the detached portion of the fragment passed through the same process of attempted regeneration before its separation from the living parts of the epiphysis had taken place. In connection with his case the author discusses the several pathogenic theories of osteochondritis dissecans, which he believes originates in necrosis of the epiphysis that first involves the spongy substance of the joint, then the bone marrow and lastly the articular cartilage. The formation of new cells may result in regeneration of the spongy substance, early during evolution of the disease; but compression of the surrounding structures, acting as local trauma, produces first a fracture with partial detachment of the involved part from the epiphysis and then, as the pathologic process evolutes, complete detachment of the fragment, which turns into an intra-articular body. Prognosis of osteochondritis dissecans, in regard to functional and anatomic restoration of

the involved joint, is good provided operation is performed early and before complete detachment of the fragment takes place. Once the latter is formed, arthritis deformans is the next complication. It is advisable not to scrape the joint during the operation, because this may cause local alterations, which may result in development of articular malformations. The route of approach for performing the operation is selected according to the seat of the osteochondritis focus.

Minerva Medica, Turin

1: 561-584 (June 16) 1936

Chronic and Subacute Anterior Poliomyelitis: Clinical and Anatomopathologic Study of Case. G. Canali.—p. 564.
*Peristence of Tubercle Bacilli in Urine After Nephrectomy in Renal Tuberculosis. G. Ravasini.—p. 570.

Tubercle Bacilli After Nephrectomy in Renal Tuberculosis.—Ravasini investigated the presence of tubercle bacilli in the urine of fifty-six persons who had undergone nephrectomy for unilateral renal tuberculosis. No tubercle bacilli were found in the urine of the twenty-two patients in whom nephrectomy had been performed more than four years previously. Tubercle bacilli were found in the urine of sixteen (47 per cent of the cases) of the group of thirty-four patients who had had nephrectomy performed less than four years previously, and in 66 per cent of the cases in the group of patients who had had nephrectomy performed less than one year and a half previously. The presence of tubercle bacilli in the urine after nephrectomy is more frequent in men than in women in a proportion of twenty to one.

Policlinico, Rome

43: 257-308 (June 1) 1936. Medical Section

Megakaryocytic Aleukemic Myelosis. V. Chini.—p. 257.
*Intravenous Alcohol Therapy and Bactericidal Power of Blood. A. Pozzi and D. Belleli.—p. 279.
Arteriosclerosis Considered as Cirrhotic Dystrophy of Arterial System. S. De Candia.—p. 285.
Water Metabolism in Neurosympathetic Hyperthermia. E. Puxeddu and E. Manuella.—p. 295.

Intravenous Alcohol and Bactericidal Power of Blood.—Pozzi and Belleli made determinations of the bactericidal power of the blood against Streptococcus viridans and Eberth's bacillus, after an intravenous injection of 10 cc. of a solution of 33 per cent alcohol in a 45 per cent solution of dextrose in normal persons and in several pathologic conditions. In all cases the bactericidal power of the blood increased.

43: 1099-1142 (June 15) 1936. Practical Section

*Insulin Resistance and Roentgen Irradiations of Hypophyseal Region: Case. L. Cannavò.—p. 1099.
Accessory Large Pancreas in Wall of Duodenal Diverticulum: Case. L. Ugelli.—p. 1106.
Influence of Artificial Pneumothorax on Cervicothoracic Sympathetic: Report of Case. F. Vicentini.—p. 1111.

Insulin Resistance and Irradiations of Hypophysis.—Cannavò reports two cases of diabetes mellitus with resistance to large doses of insulin. A series of six roentgen irradiations of the hypophyseal region in the second case resulted in controlling the resistance to insulin. The evolution of diabetes in this case proved to be the same after the roentgen treatment as before, but the resistance to insulin having been controlled by the irradiations made the utilization of insulin by the organism possible, which eventually resulted in the patient's recovery.

Rivista di Chirurgia, Naples

2: 229-280 (May) 1936

Anorectal Melanosarcoma: Clinical and Histologic Study of Case. D. Divella.—p. 229.
Rare Complication of Osseous Whitlow: Gangrenous Fusospirillary Infection; Case. C. Carone.—p. 242.
*Ill Effects of Carbon Suspensions Intravenously Injected: Results of Experiments. N. A. Martella.—p. 249.

Ill Effects of Carbon Suspensions Injected Intravenously.—For a few years, satisfactory results have been reported by some writers from the use of intravenous injections of animal carbon suspensions in the treatment of various infections. Martella made experiments on dogs to verify the changes produced by the animal carbon. The doses used were proportional to those used in the treatment of human subjects. The results of microscopic study showed that carbon particles accumulate in the lung, liver, brain and, in smaller quantity, in the spleen and in the kidney. The largest quantity of carbon accumulates in the lung, causing occlusion of capillaries, precapillaries and small blood and lymph vessels; carbon is also found in a free state in the pulmonary cells and the lumen of the alveoli. It accumulates in Kupffer's cells and in the leptomeningeal capillaries and small blood vessels of the choroidal plexus in smaller amount than in the lung. Vascular lesions and inflammatory processes, hemorrhages, neoformation and degeneration of tissues are the most frequent alterations produced, especially in the lung and the brain. The author considers the treatment harmful.

Archivos de Fac. de Med. de Zaragoza

3: 391-466 (Nos. 5-6) 1934-1935

Technic for Preservation of Anatomopathologic Specimens. A. Muniesa Belenguer.—p. 391.
*Differential Diagnosis Between Ascites and Ovarian Cyst. J. Sancho Castellano.—p. 411.
Papular Venereal Chancre: Case. E. de Gregorio and A. Muniesa Belenguer.—p. 429.
Congenital Deformities of Limbs. F. Garcia Dihinx.—p. 439.

Diagnosis of Ascites and Ovarian Cyst.—Sancho Castellano says that in some cases metrosalpingography gives sufficient data to establish a differential diagnosis between ascites and ovarian cyst. By mechanical action ovarian cysts, the uterus and sometimes the fallopian tube of the side on which the cyst is located caused dilatation of the efferent urinary organs, displacement of the ureter and of the uterus and sometimes of the tube of the cystic side to the opposite side of the cyst. Ascites, regardless of its quantity and etiology does not exert any mechanical action on those structures. The author performs a functional test of the kidney by the parenteral injection of indigo carmine. Delay in the time of appearance of the stain in the urine points to probable obstruction of the urinary tract and to the immediate performance of metrosalpingography in which a quantity of from 7 to 12 cc. of 40 per cent iodized oil is used. The injection is made slowly and with the minimal pressure. Once the uterus is filled, the oil passes to the tubes. The typical metrosalpingographic picture of ovarian cyst shows displacement of the body of the uterus and sometimes of the tube of the involved side to the opposite side. The displacement of the uterus in malignant ovarian tumors associated with ascites is slight and there is an upward deflection of the tubes. Bilateralism of the uterus in tuberculosis of internal genital organs associated with ascites is a retraction to either side rather than a displacement, and the uterus is fixed. In these cases the tubes are obstructed by the inflammatory process. In cases of parovarian cyst the uterus is displaced to the opposite side of the cyst. The metrosalpingographic picture of parovarian cyst is identical with that of tuberculosis of the internal genitals. The differentiation of these two conditions is made by the immobility (retraction) of the uterus in tuberculosis and propulsion of the cyst in the lateral culdesac in cases of cysts. The diagnosis made in the author's cases was verified by operation.

Clínica y Laboratorio, Zaragoza

28: 423-512 (June) 1936

Infrequent Pelvic Cellulitis. F. Botin.—p. 423.
Autointoxication in Pregnancy: Cases. M. V. Carceller.—p. 428.
Acute Leukemia with Hemorrhages and Fatal Septicemia: Case. S. Albasanz Echevarria and G. De La Rosa.—p. 445.
Blastocystis: Nature and Significance. D. Guevara Pozo.—p. 457.
Indications of Insulin Treatment in Nondiabetic Conditions. F. Gutierréz Muro.—p. 466.
*Autohemotherapy in Cerebral Hemorrhage. A. Salamero Castillón.—p. 479.

Autohemotherapy in Cerebral Hemorrhage.—Salamero Castillón discusses the value of autohemotherapy in prevention and treatment of cerebral hemorrhage, which he believes has been exaggerated. He treated by autohemotherapy patients suffering with arterial hypertension, whom he placed in two groups: those with clinically typical cerebral hemorrhage and those reporting sensations of formication, vertigo and paresthesia, symptoms which have been considered to indicate the near approach of cerebral hemorrhage. The treatment failed to give satisfactory results in the patients of both groups.

Medicina Ibera, Madrid

1: 853-884 (June 20) 1936

*Simple Technic for Performance of Pleural Lavages. A. Alvarez Fernandez.—p. 853.
Question on Pulmonary Syphilis. I. D. Villarejo.—p. 855.
Gynecologic Urology. S. Pascual.—p. 877.

Technic of Pleural Lavage.—The technic of treatment of empyema described by Alvarez Fernandez is as follows: After aseptic preparation of the patient, the skin of the region in which the puncture is to be made is anesthetized with ethyl chloride and then the pleura and muscular layers are anesthetized with a few cubic centimeters of a 1 per cent procaine hydrochloride solution. The exudate is removed through a trocar introduced at the lowest part of the posterior axillary line and connected with a syringe. The removal of the exudate is performed under manometric control by means of a trocar, which is introduced at the second or third intercostal space and connected with the manometer of a pneumothorax instrument by means of which the intrapleural pressure is controlled. When the latter is negative, air is injected to make it positive. In cases in which the fluid level is above the second or third intercostal space, the puncture at the lowest part of the posterior axillary line and removal of 200 or 300 cc. of the exudate to bring the fluid level below the second or third intercostal spaces precede the introduction of the trocar and then the evacuation of the exudate is continued under manometric control. After complete elimination of the exudate the manometer is disconnected from the trocar, which remains in place and is connected to a rubber tube provided with a nozzle, a key to control the current of the irrigating fluid and, on its distal end, a glass funnel to receive the irrigating fluid. The latter is prepared according to the bacteriologic nature of the exudate as follows: A 1:5,000 gentian violet solution in sodium chloride solution or distilled water if there are gram-positive bacteria in the exudate, and alkaline, chlorine solutions if there are gram-negative bacteria in the exudate. Alternating irrigations are given in mixed infections by gram-positive and gram-negative bacteria and 1:1,000 gentian violet solution in empyema of tuberculous origin. The irrigation is performed with the fluid heated to 37 C. It is temporarily discontinued for manometric determinations of the intrapleural pressure. The amount of fluid injected is from 250 to 330 cc. By means of this technic, evacuation of the exudates and intrapleural lavage is accomplished in about twenty minutes.

Memorias do Instituto Oswaldo Cruz, Rio de Janeiro

31: 185-390 (April-June) 1936. Partial Index

Heteroxynema Wernecki, New Species of Helminth in Argentina. J. F. Teixeria de Freitas and J. Lins de Almeida.—p. 185.
Mechanism of Formation of Hyperglobulia of Toxic Origin. W. O. Cruz.—p. 349.
Anatomy of Vagus Nerve of Bradypus Tridactylus. B. V. Baptista.—p. 361.
*Transmission and Prevention of Leprosy. A. Lutz.—p. 383.

Theory of Transmission of Leprosy.—Lutz says that the theories of heredity, improper feeding and direct contagion in leprosy are not proved. He believes that mosquitoes are the transmitting agents of leprosy. In prevention of the disease it is important to detect, isolate and give treatment to all lepers coming in contact with normal persons in countries where there is leprosy and to establish in these countries antimosquito crusades. It is advisable to protect doors, windows and beds with mosquito-proof nets. Hospitals and colonies for lepers must be distant from the cities and the antimosquito crusade should be intensified in the colonies. The prevention of leprosy by means of the antimosquito crusade should be no longer postponed on the ground that the rôle of mosquitoes in the transmission of the disease has not been experimentally proved. The nature of leprosy makes the performance of experiments of this character nearly impracticable, but the rôle of mosquitoes in transmitting certain diseases, such as malaria and yellow fever, analogous to leprosy, point to the logic of their rôle in transmitting leprosy. All other measures previously attempted in prevention of leprosy have proved insufficient and the results of an antimosquito crusade in the prevention of the disease seem to be promising.

Prensa Médica Argentina, Buenos Aires

23: 1355-1410 (June 3) 1936

*Bulgarian Treatment in Postencephalitic Parkinsonism. C. Bonorino Udaondo.—p. 1355.
Therapeutic Phrenicectomy. E. Finochietto.—p. 1360.
Pulmonary Suppurations. R. González Bosch.—p. 1363.
Acute Osteomyelitis: Treatment. O. R. Marottoli.—p. 1377.
So-Called Asymptomatic Nervous Syphilis. J. L. Carrera.—p. 1382.
Spasmodic Stricture of Esophagus. J. G. Fernandez, M. A. Carri and J. M. Camaña.—p. 1386.

Bulgarian Treatment in Postencephalitic Parkinsonism.—The history, technic and results of the Bulgarian treatment (Atropa belladonna) in postencephalitic parkinsonism have been reported in Italian journals for the last two years and reviewed in THE JOURNAL, July 25, page 318. Bonorino Udaondo's five patients suffered from advanced forms of postencephalitic parkinsonism. Two of the patients were unable to rise from the bed or chair and could not feed themselves. The other three were able to move or meet certain physiologic acts with difficulty. The patients were treated with Atropa roots either from Bulgaria or from Italy. Technic and instructions were faithfully followed. The author reports the following results: One of the patients, who had been unable to rise from bed, rose on the second day of treatment and walked to a park in the city and back. Muscular rigidity was greatly diminished in all cases and the expression of the face was favorably modified early in the treatment. Tremor almost disappeared in three cases. The crises of ptyalism disappeared in two cases and those of sudation in the other two cases. The condition of the intellect and the morale of the patients improved in all cases. In general, the results are satisfactory, especially if the treatment is not discontinued. The author considers the treatment promising as symptomatic and states that his results support the optimism placed by the Italian advocates of the treatment on the value of the latter in postencephalitic parkinsonism and confirm all conclusions drawn by Panegrosi from a large number of statistics of cases treated.

Semana Médica, Buenos Aires

43: 1733-1808 (June 4) 1936. Partial Index

Pathologic Anatomy of Hodgkin's Disease. M. E. Jörg.—p. 1741.
*Trypan Red Test for Examination of Function of Kidney. C. V. Zerbini and A. J. Ghibaudi.—p. 1754.
Annular Placenta in Human Beings. Cases. J. L. Ahumada.—p. 1759.
Typhoid in Subtropical Regions. J. S. Salaberry.—p. 1769.
*Early Ossification of Fontanels. J. Mendilaharzu and F. Ugarte.—p. 1776.

Trypan Red for Kidney Function Test.—The trypan red test associated with indigo carmine test (Jasienski's method) for examination of kidney function was published in the *Journal d'urologie médicale et chirurgicale* (**38**:518 [Dec.] 1934; abstr. THE JOURNAL, April 13, 1935, p. 1372). In brief, the test consists in the elimination or absence of trypan red in the urine within ten minutes following the intravenous injection of the dye. If positive results are obtained the indigo carmine test, performed by the usual technic and interpreted by the criteria generally accepted when the test is made alone, completes the combined test. According to Jasienski, if the kidney eliminates only indigo carmine it is really healthy. If it is permeable to both dyes it is diseased. If the elimination is limited to trypan red the renal parenchyma is seriously damaged. If no dye is eliminated, some structural abnormality or blockage exists. Zerbini and Ghibaudi used the procedure in several cases and conclude that the healthy kidney is not permeable to trypan red injected intravenously. The elimination of trypan red depends on the existence of albuminuria of renal origin, with which it is in direct relation. The intensity of the pink in the urine is in proportion to the degree of severity of the renal lesion. The trypan red test is of value in the diagnosis of albuminuria of renal origin and makes possible the ascertainment of the route of elimination of the dye, by one or both kidneys, during the test. The combined trypan red and indigo carmine test gives clearer results concerning renal functions than the indigo carmine test alone. The combined test is indicated especially when there is albuminuria.

Early Ossification of Fontanels.—Mendilaharzu and Ugarte call early ossification of fontanels that which takes place before the first year of age without complications. The authors made periodic examinations in a group of more than 1,654

infants and found that early ossification of fontanels took place in 137 cases (8.12 per cent). Early ossification took place during the first months of age in several normal infants. The larger number of early ossified fontanels were small from birth, although, in some cases, fontanels of an average size or even of a large size at birth became ossified early. The appearance of abnormally developed epicranial veins is an indication of suspension in the process or ossification of the fontanels, but the latter can stop regardless of the presence or absence of the former. There is no relation between the type of feeding (natural or artificial) given to the infant and the production of early occlusion, which is related, however, to the nutritional condition of the infant and the intake of vitamins. In the group of 137 infants that showed early ossification of the fontanels, twenty-one were suffering from rickets. The occurrence of early ossification of the fontanels in rachitic infants may be explained by the development of rickets after ossification of the fontanels, the type of rickets with a tendency to production of bone cells and the factor of congenital syphilis.

Beiträge zur Klinik der Tuberkulose, Berlin

88: 1-78 (May 18) 1936. Partial Index

*Tuberculous Ileocecal Tumor. W. Cossmann.—p. 1.
*Pedicled Pectoralis Muscle as Filling for Large Cavities in Pulmonary Tuberculosis (de Winter's Method). F. Häberlin.—p. 19.
*Rôle of Hilus Glands and of Pleura in Primary Tuberculous Infection and in Endogenic Reinfection. N. S. Morosowski, B. P. Alexandrowski and W. W. Lauer.—p. 24.
Lymphogranulomatosis and Tuberculosis: Clinical Investigations. L. Funstein.—p. 41.
Prophylactic Oil Instillation for Prevention of Pneumothorax Exudates. Ingeborg Laurin.—p. 59.
Pregnancy and Tuberculosis. C. H. Behr.—p. 62.

Tuberculous Ileocecal Tumor.—Cossmann says that most reports about tuberculous ileocecal tumors take up the difficult diagnosis and the surgical therapy of this disorder but neglect the anatomic-pathologic aspects. He reports several necropsies. The first case had an extremely chronic course. The necropsy revealed that, in addition to the ileocecal region, a portion of the ileum was involved. The lungs contained no signs of a former tuberculous process, and it is assumed that the primary complex had been in the intestine rather than in the lungs. However, the most noteworthy aspect was that granuloma formation and caseation were absent. The bacilli were of the bovine type, which is considered further proof that the primary focus was localized in the intestine, and were present in unusually large numbers, appearing not only in small foci of the submucosa and of the mucosa but also on the free surface of the intestinal lumen. Their virulence was low. The author thinks that in this case a strain of bovine tubercle bacilli of low virulence attacked an organism which, in the beginning, had considerable defense powers. However, in the course of the disease the local resistance became reduced, and this explains the considerable proliferation of the bacteria. The author further describes a group of four cases of tuberculous ileocecal tumors. This group differs from the first case in that all these patients had a severe pulmonary tuberculosis. In two the gastro-intestinal symptoms predominated from the beginning, whereas in the other two they appeared only during the advanced stage of the pulmonary tuberculosis. The appendix was given especial attention and numerous cross sections were examined. In this connection the author cites several cases reported by Glogauer. These cases demonstrate clearly the dependence of ileocecal tuberculosis on the disease processes of the appendix. The author believes that the dissemination of tubercle bacilli from the diseased appendix to the adjoining cecum may be a causal factor in some of the cases.

Pectoralis Muscle as Filling for Pulmonary Cavities.—Häberlin shows that the thoracoplastic closure of large tuberculous cavities often results in failure, particularly since typical total thoracoplasty has been replaced more and more by partial thoracoplasty. He points out that de Winter developed a different method. This author stresses the importance of total removal of the ribs at the apex, but, to make it impossible for the lung to become attached in some dead angle, an extensive pneumolysis is made in a preliminary session from the second rib in front, and the pedicled pectoralis muscle is used as filling. The anatomic conditions are so favorable that the pectoralis major as well as the pectoralis minor can be completely removed from the ribs and the upper arm so that they adhere only by their vascular pedicle, the acromiothoracic artery. The musculature becomes so completely mobilized that without difficulty it can be brought into the thorax through the resected second rib. The new aspect of the intervention is that, previous to reducing the skeletal structure, the volume of the thorax is reduced. During the subsequent thoracoplasty the soft muscular mass shapes itself into the remaining space, so that all dead angles are filled and the complete collapse of the lung is insured. The author asserts that he used this method with good success in a number of cases.

Hilus Glands and Pleura in Tuberculous Infection.—Morosowski and his associates show that for a number of cases the primary tuberculous complex is a pleuroglandular and not a pulmonoglandular process. The superficial pleural lymphatic system and the deep pulmonary lymphatic system are joined at two sites: in the subpleural region and in the region of the hilus. In this manner sections are formed and the so-called retrograde lymph stream is explained. The supra-apical lymph nodes are the starting point in the course of the tuberculous infection that takes place by means of inhalation. From these lymph nodes the tuberculous infection passes by way of a periadenitis and para-adenitis to the apical pleura, the lymphatic passages of which lead the infection to the hilus glands. The paravertebral or the paravertebral-mediastinal band of adhesive pleurisy which runs from the region of the head of the first rib, where the supra-apical lymph node adheres to the pleura, to the hilus gland is designated by the authors as primary glandulopleural tuberculous process, when there is no primary tuberculous focus in the lung. The cervical glands showed tuberculous changes in 46 per cent of the cases and, if those with possible changes are added, the percentage rises to 59. For the hilus glands the percentages are 87 and 100, respectively. The primary pleurisy concurs always with a tuberculous hilus gland, frequently without other changes. The paravertebral apicohilar pleurisy is of pathogenic significance for the primary glandulopleural complex, whereas all other forms of pleurisy are secondary. In endogenic reinfection, the hilus glands play a more important part than was formerly believed, for the tuberculous process passes from the hilus glands directly to the neighboring organs: the bronchi, pleura, blood vessels, interlobar connective tissue and pulmonary tissue.

Deutsche medizinische Wochenschrift, Leipzig

62: 877-916 (May 29) 1936. Partial Index

Increased Incidence of Encephalitis in East Prussia. H. Assmann and H. Vogt.—p. 877.
Blood Transfusion in Meningococcic Meningitis. W. Schmidt.—p. 881.
*Chemotherapy with Alkalis of Bile Acids in Streptococcic Infections. R. Hilgermann.—p. 883.
Results of Chemotherapy with Alkalis of Bile Acids in Puerperal Fever and in Gynecologic Streptococcic Infections. G. Schäfer.—p. 884.
Dogs as Carriers of Spirochetes of Weil Type. P. Uhlenhuth and E. Zimmermann.—p. 891.

Alkalis of Bile Acids in Treatment of Infections.—Hilgermann believes that chemotherapy does not effect a sterilization in infections but that its efficacy is due to an immunization of the organism by the killed bacteria. To prove this theory he made tests with pneumococci and alkalis of bile acids on white mice. Further, he tried his immunizatory chemotherapy on streptococcic infections. He found sodium taurocholate the most effective. He observed that, when white mice were infected with virulent streptococcus strains and then were treated with small amounts of sodium taurocholate, they survived, while the control animals died as the result of the infection. In human subjects the application of the immunizatory chemotherapy encountered at first difficulties, because the aqueous solutions of the alkalis of bile acids did not retain the optimal alkaline hydrogen ion concentration and, with an acid or neutral reaction, the preparations even increased the infection. Finally the author succeeded in finding a protective colloid, which preserves the optimal alkaline reaction. The clinical results that he obtained with the alkalis of bile acids in cases of puerperal sepsis, septic anginas and in wound suppurations proved the value of the treatment. He stresses that the chemotherapeutic substances in small quantities can be used continuously. Animal experiments proved that the alkalis of bile acids may eventually be used also for prophylactic purposes.

Zeitschrift f. d. ges. experimentelle Medizin, Berlin

98: 371-512 (May 12) 1936. Partial Index

Experimental Studies on Action of Ultraviolet Rays on Reticulo-Endothelial Cells of Liver and Spleen. Eugenia Patsouri.—p. 371.
Influence of Injection of Equimolecular Quantities of Calcium Chloride and Calcium Gluconate on Blood Coagulation. A. Kormos.—p. 383.
Sodium Chloride Requirements of Human Subjects: Sodium Chloride and Carbohydrate Exchange in Liver. J. Frey and H. Glatzel.—p. 409.
Fate of Carbohydrates in Intestine. H. Steudel and O. Flössner.—p. 451.
*Vitamin C and Gastro-Enteritis. M. Einhauser.—p. 461.
*Calcium Therapy and Calcium Prophylaxis in Lead Poisoning. A. Schretzenmayr and G. Bauer.—p. 479.

Vitamin C and Gastro-Enteritis. — Einhauser points out that vitamin C is stored in the wall of the small intestine, in the liver, in the adrenals and in the anterior lobe of the hypophysis. In the wall of the small intestine it seems not merely to be a question of storage, but it is probable that vitamin C has a particular function to perform. The author cites observations which indicate that vitamin C fulfils a detoxicating and a protecting function in the gastro-intestinal tract. The author studied the vitamin C metabolism in persons with gastro-intestinal disturbances. He made tolerance tests with cevitamic acid. To patients with gastro-intestinal catarrh who received a diet with constant vitamin content he gave daily 30 mg. of pure vitamin C either in the form of tablets by mouth or by intravenous injection. In nearly all patients this tolerance test revealed deviations from the behavior that is observed in normal persons. Moreover, there were differences in the vitamin C elimination according to whether the vitamin C was administered enterally or parenterally and whether the patient had an anacid or a hyperacid form of gastric disturbance. The utilization of vitamin C was most noticeably disturbed in patients with anacidity. The cause for this is to be found in the more rapid oxidative decomposition of vitamin C in the more alkaline intestine of the patients with anacidity and in the capacity of their pathologic intestinal flora to destroy vitamin C. The vitamin C requirements of the organism are, as a rule, inadequately supplied in patients with gastro-intestinal catarrh. It is possible to counteract this deficiency in from one to two weeks by administering cevitamic acid in the usual therapeutic doses (300 mg. daily).

Calcium Therapy in Lead Poisoning. — Schretzenmayr and Bauer observed in animals with lead intoxication with the characteristic symptoms of severe anemia and loss of weight that the intravenous administration of large doses of calcium improves or cures the otherwise fatal disorder. They observed that the symptoms of lead poisoning are suppressed and the animals are practically protected against lead poisoning if simultaneously with the dose of lead they are given large doses of calcium. On the basis of these experiments the authors discuss the possibility of the therapeutic and prophylactic use of calcium in human lead poisoning.

Wiener klinische Wochenschrift, Vienna

49: 705-736 (June 5) 1936. Partial Index

Significance of Medicohistorical Considerations in Gynecologic Clinical Instruction. H. Kahr.—p. 705.
*Micromethod of Weltmann's Reaction of Serum Coagulation. A. Havas.—p. 710.
Therapy and Criticism of Its Efficacy in Dysbasia (Claudicatio) Intermittens. F. Kisch.—p. 712.
Physical Therapy of Gastritides. Martha Brünner-Ornstein.—p. 716.
Specific Cancerous Cell. M. M. Newiandomski.—p. 718.
Clinical and Biologic Significance of Singer's Reactions for Demonstration of Castle's Principle in Gastric Juice. M. Fejgin and M. Płońskier.—p. 723.

Micromethod for Weltmann's Reactions.—Havas shows that the customary technic of Weltmann's coagulation reaction requires comparatively large quantities of blood, which have to be obtained by venesection. The author has devised a micromethod, which works with one tenth of the quantities. From 11 to 12 drops of blood, that is, approximately 0.5 cc., is withdrawn from the tip of the finger and, following coagulation, is centrifugated. Then 0.15 cc. of serum is carefully drawn off, so that there is no admixture of erythrocytes. The serum is put into a small test tube and 1.35 cc. of distilled water is added. After serum and water have been thoroughly mixed, they are distributed into twelve test tubes (0.1 cc. each). Then 0.4 cc. of the electrolyte solution is added to each tube, beginning with the twelfth and going up to the first. After shaking, the tubes are placed into the boiling water bath and fifteen minutes later are withdrawn again. The reading is taken either at once or, at the latest, after one hour and the coagulation band is recorded. It is advisable to make five or ten tests simultaneously, for this greatly simplifies matters. The author points out that, because tuberculous patients usually do not show extreme variation, the method can be further simplified by setting up a series of only nine test tubes instead of the usual twelve, omitting numbers 1, 2 and 12. However, if complications are suspected (pneumonia, new, exudative pleurisy, peritonitis and so on), the full series of twelve should be set up. The author thinks that in other disorders the series may likewise be shortened. He says that the test was made on approximately 500 patients with tuberculosis and that the coagulation band proved a helpful aid in the clinical evaluation of these cases. He admits, however, that the reaction is of value only in connection with other clinical methods and after several repetitions.

Norsk Magasin for Lægevidenskapen, Oslo

97: 561-664 (June) 1936

Criminobiologic Investigations. G. Langfeldt.—p. 561.
*Hemorrhages in Posterior Portion of Brain Stem in Intoxications and Inflammation Compared with Hemorrhages After Trauma. O. Berner.—p. 584.
Quantitative Urobilin Determination: Second Report. E. Wang.—p. 591.
*Stricture of Splenic Vein: Splenic Pylephlebostenosis. J. Rø.—p. 603.
"Pseudotumors" in Abdomen. F. Harbitz.—p. 615.
Postappendicitic Peritonitis Complicated by Intestinal Obstruction with Recovery After Jejunocolostomy and Cecostomy. K. Haugseth.—p. 624.

Hemorrhages in Brain in Wood Alcohol Poisoning.—Berner says that in the five fatal cases of intoxication from wood alcohol here reported and one earlier case he established hemorrhages at the base of the fourth ventricle, in one case macroscopically visible. The arteries in this localization thus seem especially sensitive to the irritation produced by wood alcohol. Hemorrhages at the base of the fourth ventricle in a case of intoxication from illuminating gas are also described. Attention is called to the characteristic extent of these hemorrhages, before the acoustic striae and close to the medial sulcus, analogous to traumatic hemorrhages, and to the fact that his examinations of the brain fixed in solution of formaldehyde afford favorable conditions for close observation. The observations are seen to agree with the clinical picture in intoxications in which respiratory paralysis usually occurs directly after blindness. In a case of poliomyelitis, hemorrhages similar to those in traumas and intoxications were found.

Stricture of Splenic Vein.—Rø describes the case of a girl suffering from violent periodic vomiting of blood, usually without warning, following trauma of the epigastrium at the age of 10. In the course of six years, marked secondary anemia appeared; improvement resulted from iron medication, but blood transfusions seemed to have an unfavorable or only temporarily favorable effect. There was a varying enlargement of the spleen, more marked during the quiet intervals. Roentgen examination showed probable varices in stomach and esophagus. Splenectomy was advised but refused. Death occurred from hemorrhage. This instance gives a characteristic picture of splenic pylephlebostenosis, the designation used by Wallgren for all obstacles in the portal system expressed by enlargement of the spleen, periodic hematemeses and anemia. The disorder occurs mainly in children. The stenosis occurs as the result of obstacles of different anatomopathologic kind and with varying localization in the portal system and is classified as intrahepatic, truncular or radicular, as in the case discussed. Common to all is a secondary formation of thrombi which aggravates the unfortunate circulatory condition. The importance of trauma as an etiologic factor is emphasized. Treatment is either medicinal or operative. The results of operation are best in children. Prognosis is grave; without an operation the patient may live upward of ten years.